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Information for this inventory is limited to four-year college and university baccalaureate programs. The data were compiled from the 1968-69 catalogs of the 46 Massachusetts colleges and universities which have specified health training programs. Criteria for selection included the following: (1) The program must train students for a specified health position, (2) the length of course must be given in academic years, and (3) descriptive texts on job functions and course requirements must be given. Information on the programs includes general discussions of the type of curriculum in each listed occupation and the courses required. The inventory consists of three parts. A preface contains background information including sponsorship, scope of the project, methods of compilation, and a bibliography. The second section includes a list of health positions and cross references to the inventory. The final section contains the detailed programs listed in alphabetical order. (BC)

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

OCT 23 1968

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MASSACHUSETTS

HEALTH MANPOWER TRAINING PART II

IN 4 YR. COLLEGES & UNIVERSITIES

INVENTORY

1968

Training Center for Comprehensive Care
170 Morton Street
Jamaica Plain, Mass. 02130

SE005 856

INVENTORY 1968

MASSACHUSETTS HEALTH MANPOWER TRAINING

PART II: IN 4-YEAR COLLEGES & UNIVERSITIES

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September 1968

Training Center for Comprehensive Care
170 Morton Street
Jamaica Plain, Mass. 02130 (522-0824)

A C K N O W L E D G E M E N T S

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Others whose cooperation was most helpful: Mrs. Dorothy Simpson, New England Association of Colleges and Secondary Schools; Miss Ruth Williams, Massachusetts Department of Public Health Library.

P R E F A C E

Background of the Study

This two-part health manpower survey was undertaken in order to discover the extent of Massachusetts health training, and to provide a resource tool for those engaged in training and recruitment.

In the last three years, since 1965, 230 training programs at less than a baccalaureate level were started in Massachusetts. Part I of the manpower survey, published May 1968, lists these new training programs as well as the 235 existing ones.

The college and university catalogs of the last few years show many new courses in health fields, ones oriented to community problems, leadership training in group work as well as technological advances in public and environmental health fields and a trend to the multi-discipline approach as an undergraduate preparation for graduate specialization. No document existed that listed the 322 Massachusetts college level health training programs together in one pamphlet where they could be examined as an entity. Part II of the survey endeavors to do this.

The two-part study is published in an effort to help all groups. Part I is a practical resource tool for shorter terminal education leading to a wide variety of health occupations. Part II lists health occupations that require many years of education.

Sponsorship

Part II was compiled under the direction of Suzanne Greenberg, director of the Training Center for Comprehensive Care, by Nadia Williams, survey coordinator, with the research assistance of Helen Meltzer, executive director of the Massachusetts Public Health Association, and Virginia Tobin.

The survey was funded by the U. S. Office of Economic Opportunity in cooperation with the Massachusetts Department of Public Health.

Scope of Part II

Information for the inventory of less than baccalaureate programs (Part I) was obtained by a questionnaire survey to the many types of health, educational, and community organizations offering programs of training. The Part II inventory of higher education programs is limited to those conducted in four-year colleges and universities.

It does not include postgraduate training offered by medical and other health institutions for persons with college degrees. Nor does it include all the courses given by these institutions in affiliation with the colleges and universities. For a complete picture of Massachusetts health manpower training, these programs and courses should be included. It is hoped that at a later date this may be done.

Method Used in Compilation

Part II was compiled from the 1968-69 catalogs of 46 Massachusetts colleges and universities which give specified health training programs. Criteria for selection included the following:

(a) The program of training must be one leading directly to a specified health position. Since there are opportunities in so many of the health fields at entry level for persons with bachelor's degrees in the basic health sciences, these degree programs were excluded (except in instances where clinical or practicum experience accompanied the course).

(b) The length of course is given, in academic years, wherever clearly stated in the catalog.

(c) Comments on the programs were selected at random to give the student reader a very general picture of the type of curriculum in each listed occupation and course required. When one college program is fully described, no description is given for subsequent listings offering similar courses.

The phrase "includes courses in:" is used to indicate that the descriptive listing of courses is not complete. The student should consult the respective catalogs for the full offerings.

Descriptive text on job functions and course requirements is included to aid the high school student. It is derived from the bibliographic sources and from catalog descriptions. Reference numerals in the text refer to these sources. Each occupation description was reviewed by a qualified professional in Massachusetts for its applicability to the local situation.

Bibliography

1. Health Careers Guidebook. U. S. Dept. of Labor, Washington, D. C. 1965 (Supt. of Documents, 0-783-119) $1.50. 251 pp. Written for the student.

2. Health Resources Statistics 1965. U. S. Public Health Service. Publ. No. 1509. Washington, D. C. 1966 (Supt. of Documents 0-227-680). 182 pp.

3. Horizons Unlimited. American Medical Association, Chicago, Ill. (535 N. Dearborn St., 60610). Paperback. 134 pp. Written for the student.

L I S T O F H E A L T H P O S I T I O N S

(Titles of Positions which Require a Baccalaureate or Graduate Degree
Cross-references to the Inventory. Inventory titles are underlined)

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research)..... 24
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Toxicologist (See Food Technology, Environmental Health).....19, 14
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I N V E N T O R Y

HEALTH MANPOWER TRAINING IN MASSACHUSETTS. PART II. IN FOUR-YEAR COLLEGES & UNIVERSITIES

ADMINISTRATOR

Administrative opportunities in the health field cover a wide range of situations. There are hospital administrators (and within the hospital, unit administrators in charge of functions such as physical therapy, wards, admission etc.). There are health officers, nursing home administrators, and other leadership positions in health service organizations such as local boards of public health, voluntary health agencies, day care centers, and roles in government agencies and departments.

The situations vary from organizations employing many hundreds, such as hospitals and government agencies, to three or four member staffs in the local departments of public health, community service clinics, or the doctors offices.

In the smaller situations the administrator is usually a health professional, a medical or public health physician, a dentist, an administrative nurse, a sanitarian, but there are many other administrative positions for which the medical, dental, or nurse training is not required. Many of the assistant jobs to the health administrators are filled at the entry level with persons with a baccalaureate degree in the sciences. Advancement comes with on-the-job experience, or additional further training at a later date.

The supportive administrative staff positions are not considered in this inventory since training for them is the same as that preparing for similar positions in industry and other services. These jobs include: administrative assistants, comptroller or business manager, personnel director, purchasing agent, public relations director, chief engineer and maintenance administration.

Training Programs	
Brandeis University. Florence Heller Graduate School for Advanced Studies in Social Welfare, Waltham, Mass. 02154 M. Social Work or M. A. 2 yrs..... Advanced Certificate in Social Welfare 1 yr. beyond a master's degree..... D. Social Welfare, or Ph. D.....	A doctoral program with a master's degree received during the course of study. Educates for social work administrative and consultative roles, for research and teaching. Accepts social science A. B. graduates as well as physicians, public health nurses, social workers, and other experienced professionals.

continued on next page

ADMINISTRATOR

Training Programs	
Harvard University. School of Public Health, Dept. of Health Administration Services 55 Shattuck St. Boston, Mass. 02115 M. P. H. (Health Services Administration) 1 year..... Dr. P. H. (Health Services Administration).	Emphasis is placed on planning, organization, delivery and evaluation of health services. Traditional administrative techniques such as budget preparation, personnel management, and supervision are also treated. There is a close relationship with the Harvard Medical School, its affiliated hospitals, and community services, the School of Business Administration, and the Department of Economics. Specialization is in administration of dental health, medical care, and health education.
Interfaculty program on health and..... medical care	Special courses for physicians, health professionals, economist, social scientists, and management analysts who are enrolled in master's or doctorate programs at the school. Training is for administrative and policy-making posts in medical care and general public health programs.
Northeastern University, 360 Huntington Ave., Boston, Mass. 02115 (University College) B. S. (Management of Health Agencies & Institutions)..... 8 yr. part-time program (174 credits)	Program offers three electives for specialization: (1) Hospital organization and management, (2) Long-term care administration, (3) Public health and personal and community health.
B. S. (Nursing Home Administration)..... A. S. (Nursing Home Administration)..... Letter of attestation..... (A program in cooperation with the Massachusetts Federation of Nursing Homes)	A 40 credit concentration that can be part of an eight year part-time baccalaureate program; or the credits can be applied to an associate degree, or the courses can be taken first with an intermediate goal of a letter attesting to the completion of the course sequence. The letter meets the requirements for professional and regulatory agencies.
(Graduate School of Education) M. Educ. (Admin. Rehab.).....	

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ADMINISTRATOR (contd.)

Training Programs	
Simmons College, 300 The Fenway, Boston, Mass. 02114 B. S. Home Economics (Institutional Management).....	
Springfield College, Springfield, Mass. 01109 B. S. Urban Community..... B. S. Community Leadership & Development...	
University of Massachusetts. Graduate School, Department of Public Health Amherst, Mass. 01002 M. S. (Administration of Health Services).. M. S. (Public Health).....	2 yrs. Includes courses in other schools & departments such as Administrative practices, Principles and policies of administration, Organizing for production (in the Dept. of Business Administration). Social welfare..problems of administration (in Dept. of Sociology).

BIOMEDICAL ENGINEER

The biomedical engineer develops new instruments and equipment for use in patient care or in research, and applied engineering techniques to improve the methods of diagnosis and treatment of disease, and accidents to the human body.

He is responsible for assembling, adapting, and maintaining the equipment as well as developing the new devices. These may be parts used to repair or compensate for damaged parts of the body such as artificial heart valves, kidney machines; or the engineer may develop methods to monitor air pollution, invent new screening methods, or work on surgical instruments, and adapt orthopedic and prosthetic appliances.

Special training in plastics enables him to work on repair and replacement materials, and the development of artificial organs.[2]

The biomedical engineer must have a bachelor of science degree with a concentration in mathematics, biophysics, or one of the engineering sciences. He will find a more responsible position and greater remuneration, with the ability to work in independent research, if he has his master's or doctorate degree in biomedical engineering. His field will be working in hospitals, scientific foundations, government laboratories for medical research, universities, and electronic and instrumentation industries.

Training Programs	
Clark University, Worcester, Mass., 01610	
M. S. Biomedical Engineering.....	2 yrs. Admission requires a bachelor's degree in mathematics or one of the engineering sciences.
Ph. D. in Biomedical Engineering, or.....	Program in cooperation with Worcester Polytechnic
Ph. D. in Biology	Institute.
Boston University. College of Engineering, Charles River Campus, Boston, Mass. 02215	
B. S. Biomedical Engineering.....	
Northeastern University, College of Engineering 360 Huntington Ave., Boston, Mass. 02115	
B. S. in Engineering Biophysics.....	5 yr. cooperative plan
Worcester Polytechnic Institute Worcester, Mass. 01609	
M. S. Biomedical Engineering.....	
Ph. D. Biomedical Engineering.....	

CHILD CARE SPECIALISTS

There are opportunities in hospital recreation programs, in day care centers, and community action programs in urban areas for the person who has specialized in child study and child development.

Courses at the bachelor degree level give the student, in addition to child development studies, familiarity with testing, guidance, nutrition, family relations, and children in the urban setting. Usually field experience is required before graduation. Most of these courses are preparing nursery school and kindergarten teachers, but the graduates are equipped to work in the medical and health settings as well.

There are, also, beginner's jobs which with advanced study, will qualify for work with children who have special needs, such as the emotionally disturbed, handicapped, and retarded. (See the section of this inventory on "Rehabilitation Positions")

Training Programs	
Simmons College, 300 The Fenway, Boston, Mass. 02115	
B. S. Child Development: 4 yrs.....	Prepares the individual to work with young children in diverse situations including hospital recreation programs and day care centers and community action programs in urban areas. Course is also preparation for graduate study with the child who is emotionally disturbed, handicapped, or retarded.
Tufts University. Eliot Pearson Dept. of Child Study, Medford, Mass. 02155	
B. S. Child Study: 4 yrs.....	Prepares for professional work with children in... hospitals, day care centers, in testing, teaching, guidance, and is also preparation for graduate work with the atypical child.
M. S. Child Study/M. S. Educ. (Child Study).	One year and a summer session (36 credits)
University of Massachusetts, School of Home Economics, Amherst, Mass. 01002	
B. S. Home Economics (Child Development)....	Prepares student to work in group programs serving ... clinics for exceptional children, hospital recreation programs, community and welfare agencies.
M. S. Human Development.....	Includes advanced courses in Child development, Nursery school management.

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CHILD CARE SPECIALISTS (contd.)

Training Programs	
Wheelock College, 200 The Riverway, Boston, Mass. 02215 B. S. Educ. (Nursery & Primary)..... M. S. Educ.: 1 yr. plus summer school full time program (32 credits).....	At the masters level there are four curricula: (1) for the experienced teacher, (2) for the recent graduate, (3) new careers, and (4) for the teacher of the emotionally disturbed child. The new careers is for mature men and women, college graduates, who are employed in other fields and would like to shift. This is a part time study with late afternoon and evening classes. Includes student teaching full time. All courses work with the economically deprived child and family in field situations, and include tests and measurements.

DENTAL HYGIENIST

The dental hygienist cleans teeth and instructs the patient in proper tooth-brushing techniques and correct diet for good teeth. Under the supervision of the dentist, the hygienist removes stains and calcium deposits, polishes teeth, and massages gums. She may apply fluoride solution to children's teeth, take and develop x-rays, mix filling compounds, prepare solutions, administer prescribed treatments, sterilize instruments and assist the dentist at the chairside.

Although dental hygienists work primarily in dental offices, many have positions in public and private schools, clinics and other institutions. The field of the dental hygienist with an associate degree is usually in clinical practice. (See Part I). With a baccalaureate degree, she may teach in a school, hospital, or public health agency; and with a more advanced degree the training provides background for teaching in a school of dental hygiene.

The dental hygienist must be registered in the state in which she wishes to practice. She takes a licensing examination given by the state board of dental examiners.

Training Programs	
Northeastern University. University College 360 Huntington Ave., Boston, Mass. 02115 B. S. (Dental Hygiene).....	The first two years are taken at the Forsyth School of Dental Hygienists in cooperation with Northeastern leading to an associate degree. The remaining requirements are taken in liberal arts at the University College (part-time, 78 additional credits).

DENTIST

Most dentists are general practitioners, working in their private offices, but some teach in dental schools, engage in research, administer dental programs, become public health dentists, or provide care to patients in public and private clinics, hospitals, military installations, and other institutions.

In their work they are assisted by the dental hygienist, the dental assistant, or the dental laboratory technician (described in Part I). However, some dentists do all their own work, including the making of artificial teeth and dentures.

Modern dentistry places great emphasis upon the prevention of dental disease through such measures as fluoridation and dental education. Regular examination makes possible early diagnosis and treatment of tooth decay, prompt detection of oral cancer; and educational programs stress the importance of proper diet, correct oral hygiene practices.

Dental schools usually require a bachelors degree (with prescribed courses) as part of their admission requirement, though some accept persons with three years of college. Fifteen colleges in Massachusetts specify pre-dental programs of the required courses. At other colleges, the student himself must select

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DENTIST (contd.)

and plan his required background. After graduation, the graduate takes an examination given by the state board of dental examiners for his licence to practice.

If he wishes to specialize, he takes at least two years of advanced study to receive his master's degree in dental science (M.D.S. or M.S.), or one year of study for a master in public health (M.P.H.). In addition, he needs several years of experience in his specialty to qualify for the examination by the nationally recognized board in each of the dental specialties.

He may also wish to pursue his specialty further, studying another year, to receive his doctorate of science in dentistry (D.D.S., or D.M.D.), or a doctorate in public health on completion of independent and original investigation after his master's degree.

It is possible to earn a Certificate of Advanced Graduate Study (C.A.G.S.) upon completion of the first year of course work at the master's level and the clinical aspects of the training.

There is a nationally recognized examining board for each of the dental specialties:

- Endodontics (root canal treatment)
- Oral pathology (diseases of the mouth)
- Orthodontics (teeth straightening)
- Pedodontics (children's dentistry)
- Periodontology (tissues and gums, bones)
- Prosthodontics (artificial teeth or dentures)
- Public health dentistry

Training Programs	
Harvard University School of Dental Medicine 188 Longwood Ave., Boston, Mass. 02115	
D. M. D.....	4 yr. program. Prerequisite: bachelor's degree with specified pre-dental courses.
Tufts University, School of Dental Medicine 136 Harrison Ave., Boston, Mass. 02111	
D. M. D.....	4 yr. program. Prerequisite: bachelor's degree or minimum of three years college with specified pre-dental courses.
(DENTAL SPECIALIZATION)	
Boston University, School of Graduate Dentistry 80 Concord St., Boston, Mass. 02118	
M. S. Dentistry.....	Length of course varies with each specialization: Oral Surgery, 1 yr. plus 2 yrs. hospital train-

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Training Programs	
(DENTAL SPECIALIZATION contd.)	
Boston University, School of Graduate Dentistry (contd.)	ing; Anesthesiology, 1 yr.; Periodontology, 2 yrs., 1 yr. clinical, 1 yr. academic;Orthodontics, 2 yrs. with intervening summer; Endodontics, 2 yrs. with supervised clinical training included; Prosthetic dentistry, 2 yrs. including clinical and laboratory; Oral Pathology, 2 yrs., first one at the hospital in general pathology, second in the specialty; Pedodontics, 2 yrs. including clinical experience; Public health dentistry, 2 yrs.
Dr. Sci. in Dentistry, 3 yrs.....	An additional year after the M. S.; or as is usually divided: 1½ yrs. course work and clinical; 1½ yrs. research, thesis and oral examination. Work in an elected specialty in one of the above areas.
C.A. G. S..... (Certificate of Advanced Graduate Study)	This may be granted after completion of the first year of course work and completion of clinical experience.
Harvard University, School of Public Health 55 Shattuck St., Boston, Mass. 02115	
M. P. H. Dental Public Health and Ecological Dentistry.....	2 yr. program. One year at the School of Public Health and one year residency at Mass. Dept. of Public Health.
Postdoctoral fellowship program in dental public health..... (In cooperation with the Harvard School of Dental Medicine and the Mass. Dept. of Public Health)	3 yrs. First year at the School of Public Health, second year is a residency with the Mass. Dept. Public Health, third year is spent in research. For careers in dental public health and ecological dentistry.
Harvard University, School of Dental Medicine 188 Longwood Ave., Boston, Mass. 02115	
Postdoctoral Certificate in Academic Dentistry.....	3 yrs. in clinical areas of Orthodontics, Periodontics, Dental Medicine, Pedodontics. In collaboration with the Forsyth Dental Center and clinics, the Mass. General Hospital, and the Children's Medical Center.

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DENTIST (contd.)

Training Program	
(DENTAL SPECIALIZATION contd.)	
Harvard University, School of Dental Medicine Residency required for A. B. P. diploma from American Bd. of Pedodontics..... Internship in Oral Surgery..... Prosthetic Dentist course.....	Residency at Children's Medical Center. Internship 8 mos. in cooperation with Harvard Medical School, School of Dental Medicine, and Massachusetts General Hospital. Prosthetic Dentistry 11 mos. To meet the requirements for the Board of Prosthetics. Special programs in oral science, supported by a grant from the Nat. Institute of Dental Research to prepare graduate students, postdoctoral dental investigators and others for research careers.
Massachusetts Institute of Technology. Dept. of Nutrition and Food Science 211 Massachusetts Ave., Cambridge, Mass. 02139 S. M. Oral Science..... Ph. D. or Sc. D. Oral Science.....	1 yr., plus a summer term. Training identical for both degrees, but M. S. requires a foreign language for admission to the program. Specialization: oral pathology, oral pedodontics; orthodontics, periodontics, prosthodontics, and radiology.
Tufts University. Graduate School of Arts & Sciences, 136 Harrison Ave., Boston, 02111 M. S. or M. D. S.....	For those interested in training graduates of dental schools; and preparation for specialty practice and the granting of the diplomas from the specialty boards.
Postgraduate certificates of accomplishment in dental specialties.....	
Postgraduate refresher courses..... (Div. of Continuing Education, School of Dental Medicine)	Recent developments in the clinical practice of dentistry.

DIETITIAN & NUTRITIONIST

The dietitian and nutritionist take different courses in their training and their functions usually differ, but their titles are often used interchangeably. Basic training for both requires courses in chemistry and biology as well as foods and nutrition courses, leading to a bachelor's of science degree. Special courses are elected in the final undergraduate years to prepare for specific positions and satisfy special interests. For example, the future dietitian may take courses in institution management while the future nutritionist may take advanced nutrition and science courses, including the social sciences.

Following graduation from college, a fifth year of training, a dietetic internship, may be taken in a

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hospital, university, or industrial setting. Some internships provide the opportunity to work concurrently for a master's degree. These programs take 18 months instead of the usual 12 month internship. An approved dietetic internship qualifies a dietitian to become a member of the American Dietetic Association.

The administrative dietitian plans meals and supervises the preparation of food to meet the varied nutritional needs of people in hospitals, schools, industrial cafeterias and commercial restaurants. She, or he, is mainly concerned with the management of business aspects of the dietary department.

As a member of the medical team, the therapeutic dietitian in the hospital interprets the diet orders given by the physician and modifies the patient's food to fit the prescription. The teaching dietitian participates in the training of dietetic interns, nurses, dental, or medical students. The research dietitian is employed in hospitals, industry and the armed forces. She plans diets for special studies on various disease conditions or she helps develop new food for use by the public or servicemen in the field and in space.

The role of the nutritionist is principally that of a teacher and consultant. She often has had graduate training with a master's degree in nutrition or public health, and may be employed in outpatient clinics, health centers, or in public health departments where she will be consultant to the staff.

Although she may work directly with patients, planning meals for children, the aged, expectant mothers, the overweight, diabetic, or persons suffering from ulcers and allergies, the main emphasis is in working with the community with groups of people. They may be nursing groups, or she may serve as a consultant on committees of other professionals. She may write articles for newspapers or prepare special pamphlets. In so doing she helps promote an awareness in her professional colleagues of the nutritional needs of the community, stimulating a demand for nutrition services and striving to maintain the highest possible standards.

Training Programs	
Atlantic Union College, South Lancaster, Mass. 01561	
B. S. Foods and Nutrition.....	4 yrs.
Harvard University, School of Public Health, Dept. of Nutrition, 55 Shattuck St. Boston, Mass. 02115	
M. P. H. (Nutrition).....	1 yr. Program for physicians or persons with similar background in biological sciences.

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DIETITIAN & NUTRITIONIST (contd.)

Training Program	
Massachusetts Institute of Technology 77 Massachusetts Ave., Cambridge, Mass. 02139	
S. M. Nutrition and Food Science.....	Masters program is one year if the student has a M.I.T. bachelor's degree with major in nutrition, food science, food technology, chemistry, biology or chemical engineering or in one of the medical, agricultural or other physical sciences, or an M. D., D.D.S., D. M. D. or D. V. M. degree. Transfers may take longer.
D. Science Nutrition and Food Service.....	
Ph. D. or Dr. Sc. in Food Science and Technology.....	3½ yrs. including master's year of study, independent research thesis, and comprehensive written and oral examinations. Prepares for research positions.
Ph. D. and D. Sc. in Nutritional Biochemistry and Metabolism.....	
Special program in Clinical Nutrition and Metabolism.....	For persons who hold the M. D. or equivalent from medical school and have completed one-year internship or postdoctoral training. The Department administers a clinical research center for metabolic studies on hospitalized and ambulatory patients.
B. S. Life Sciences..... Courses in food sciences, nutrition and biology	4 yrs. Prepares students for teaching and beginning research positions in biology, nutrition, food science, for graduate study, and work with industries concerned with biological materials and the fermentation processes.
Regis College, Weston, Mass. 02193	
Undergraduate course in Institutional Management & Food Preparation.....	3 hrs. lecture, 3 hrs. laboratory
Simmons College. School of Home Economics 200 The Fenway, Boston, Mass. 02115	
B. A. Home Economics.....	4 yrs. Student may elect to specialize in Institutional management, Dietetics, or Foods and nutrition.

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Training Programs	
Simmons College. School of Home Economics (contd.)	
M. S. Home Economics (Foods & Nutrition).....	Part-time program primarily for the teacher, but others may apply. Must be completed within 8 yrs.
State College at Framingham State Street, Framingham, Mass. 01701	
B. S. Educ. (Foods & Nutrition).....	4 yrs.
Tufts University, Graduate School of Arts & Sciences, Dept. of Education, Medford, Mass. 02155	
M. Educ. (Nutrition Education)..... (In cooperation with Tufts School of Medicine, Dept. of Preventive Medicine, and Boston Dispensary)	18-month program in dietetics and teaching including a 12-month training program at the Frances Stern Food Clinic of Boston Dispensary.
University of Massachusetts. School of Home Economics, Amherst, Mass. 01002	
B. S. Home Economics (Dietetics & Institutional Management) (Foods in Business).....	4 yrs.
M. S. Nutrition & Food.....	1 yr. after a baccalaureate in home economics with a major in dietetics or nutrition and food, strong related sciences.
Ph. D. Nutrition and Food.....	
Dietetic internships:	
Beth Israel Hospital 300 Brookline Ave., Boston, Mass. 02215.....	All programs are one year courses. For admission the candidate must have his baccalaureate degree with specialization in nutrition, institutional management, or sciences.
Peter Bent Brigham Hospital 721 Huntington Ave., Boston, Mass. 02115.....	
Mass. General Hospital Fruit Street, Boston, Mass. 02114.....	

ENVIRONMENTAL HEALTH POSITIONS

To attack such multidimensional problems as air pollution, food protection, occupational health, radiological health, water supply and pollution, and other health hazards in the general environment, requires a wide variety of professional and technical skills.

In the past, those who were concerned with healthful surroundings were the sanitary engineer, the physician, and some research scientists. They sought to prevent the spread of communicable disease by eliminating or controlling its sources and its carriers in the environment, and by personal vaccination. Today the contaminants have multiplied due to persons moving from place to place, the airplane, more people in cities, greater population, detergents in the water supply, more packaged foods and chances of its deterioration.

Today, a greater number of specialists are needed, many with new technical knowledges and skills, to control the environmental hazards: industrial hygienists, health and safety specialists, food technologists, food analysts, and food inspectors, radiological health specialists, and a range of research scientists: biologists, bioengineers, chemists, ecologists, hydrologists, limnologists, meteorologists, physicists, physiologists, toxicologists, veterinarians. They work from local, state or national public health offices and in the public health laboratories, private as well as public water works, and in industrial and university situations. There are positions also for public health dentists, public health nurses, and research specialists in biostatistics, epidemiology, health demography. (Training for laboratory positions, for food technologists, for nurse specialization, and veterinarians is listed under separate titles in this inventory).

The minimal educational requirement for the environmental professional is a bachelor's degree in engineering or one of the biological or physical sciences. The trend, however, is toward graduate study in one of these fields, or in an area of specialization such as air pollution, industrial hygiene, radiation science or sanitary science.

Training Program	
Harvard University, Graduate School of Arts & Sciences, Div. of Engineering and Applied Physics 75 Mt. Auburn St., Cambridge, Mass. 02138 A. M. (Engineering)..... S. M. (Engineering)..... M. Engineering..... Ph. D. Engineering.....	Courses in: Design of water resource systems, Advanced topics in environmental engineering, Water supply engineering, Operations in water and water treatment, Principles of water chemistry, Chemical and biological processes in sanitary engineering, Principles of environmental health, Operations research in environmental health engineering, Water quality and its control, Environmental microbiology, Analysis of air contaminants, etc.

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ENVIRONMENTAL HEALTH POSITIONS (contd.)

Training Programs	
Harvard University, School of Public Health 55 Shattuck St., Boston, Mass. 02115, Dept. of Physiology. M. P. H.....1 yr. D. P. H..... (1st yr. M. P. H.; 2nd yr. independent research and thesis.)	Prerequisite for the M. P. H. program is an M.D. or similar background in the biological sciences. Courses in Human physiology, Environmental physiology (human tolerance to temperature, measurement of physical fitness, age and fatigue, types of muscular work), Principles of toxicology (effect on living tissue), Special topics in respiratory physiology, Radiation biology.
M. S. in Industrial Health..... (In cooperation with the Graduate School Division of Engineering) Same prerequisite as M. P. H.	Includes courses in: Basic problems in occupational health and industrial environments, Analysis of air contaminants, Environmental control, Aerosol technology, Radiation protection engineering, Advanced air analysis.
M. S. in Hygiene..... (Kresge Center for Environmental Health) 1 yr. program for MDs and equivalent background. 2 yr. program for others. Dr. S. in Hygiene..... (Advanced work in fields described under the M. S.)	Courses in: Principles of environmental health, Aviation health and safety, Introduction to radioactivity and radiation protection, Problems in radiation dosimetry, Occupational medical seminars, Occupational medical clinics, Human factors in occupational performance and safety, Occupational medicine, Community air pollution, Operations research in environmental health engineering.
Programs in International Health leading to M. P. H., S. M. in Hygiene, or D. P. H.. (A cooperative program with six other Harvard University divisions)	These programs lead to careers in World Health Organization, U. S. State Department, J. S. Public Health Service, Peace Corps, industrial organizations, mission groups, philanthropic foundations, other government agencies providing and planning health services for developing country.
Certificate in International Health..... (Granted by American Board of Preventive Medicine in the area of general preventive medicine)	3 year residency for physicians
Lowell Technological Institute, Lowell, Mass. 01854 (Div. of Physics & Engineering) B. S. Nuclear Engineering.....	4 yrs. Includes in the last year courses in sanitary engineering.

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ENVIRONMENTAL HEALTH POSITIONS (contd.)

Training Program	
Lowell Technological Institute (contd.) (Div. of Evening Studies) Associate Degree in Applied Science in Civil Engineering.....	An inservice training program limited to employees of the Commonwealth of Massachusetts and the cities and towns of the commonwealth. 5 yr. program, evening. Includes two courses in sanitary engineering.
Associate Degree in Radiological Health Technology..... (See Part I, of this report)	5 yr. evening program, three evenings a week, Prepares a radiological health technician trained to (1) take, prepare and analyze samples, (2) assist in safety surveys for protection from radiation-producing machines and areas utilizing radioactive materials, (3) assist in operation of radiation surveillance equipment which monitors radioactivity in air and water, (4) operate, maintain, and calibrate laboratory counting equipment, (5) assist in the measurement of radiation contamination and external radiation and study shielding, storage facilities, waste disposal plans, and facility operating practices.
Massachusetts Institute of Technology. Graduate School. 211 Massachusetts Ave., Cambridge, Mass. 02139 B. S., M. D., D. Sc., or Ph. D. in Civil Engineering.....	Includes courses in: Water resource systems, Water quality control, Hydromechanics, Fluid mechanics, soil mechanics.
M. S. Nuclear Engineering. 1 yr.....	Includes radio isotope study and the biological effects of radiation, shielding, treatment of radioactive wastes.
Ph. D. Nuclear Engineering. Advanced study.....	
M. S., Ph. D. Food Toxicology..... (Division of Nutrition & Food Science)	Evaluating the wholesomeness and safety of foods, additives, contaminants, techniques of safety evaluation, biological assay, and parameters of biological response.

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ENVIRONMENTAL HEALTH POSITIONS (contd.)

Training Programs	
Northeastern University, 360 Huntington Ave., Boston, Mass. 02115	
(School of Engineering)	
B. S. Civil Engineering.....	5 yrs. cooperative. Includes in the last year a course in sanitary engineering.
(Graduate School of Engineering)	
M. S. Civil Engineering (Sanitary Engineering).....	2 yr. part-time or 1 yr. full time. Courses include: Sanitary chemistry, Water and waste treatment and analysis, Industrial hygiene, air pollution, and Radiation health engineering.
(Graduate School of Arts & Sciences)	
M. S. Health Sciences.....	A part-time evening program including Environmental microbiology, Parisitology, Medical microbiology.
(Lincoln College)	
B. S. Engineering Technology..... (in cooperation with University College)	Prepares graduate to assume responsibilities related to the design, construction, operation and supervision of municipal plants and systems concerned with the storage and distribution of water and also the disposal of sewage and waste in urban areas, with due consideration for contamination and pollution.
Assoc. Degree in Engineering. 4 yrs. part-time (Municipal & Sanitary Engineering)...	
Smith College, Northampton, Mass. 01060	
B. S. Environmental Biology.....	4 yrs. Courses include Environmental health, Concepts of public health, Microbiology, Ecology, Biogeography, Health education seminar (evening course).
Southeastern Mass. Technological Institute College of Engineering. North Dartmouth, 02747	
B. S. Civil Engineering.....	In the third and fourth year there is a required course in Sanitary engineering, and elective courses in Water supply, Sewage disposal, and Sanitary bacteriology.

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ENVIRONMENTAL HEALTH POSITIONS (contd.)

Training Programs	
Tufts University. College of Engineering Medford, Mass. 02155	
B. S. Civil Engineering (Sanitary Engineering or Environmental Health Engineering).....4 yrs. M. S. Civil Engineering (Sanitary Engineering).....2 yrs.	Includes courses in Sewage and water treatment, Water and waste water chemistry, Public health, Radiological health, Advanced hydraulics, Parisitology, Public health administration, Principles of epidemiology, Biology-ecology.
University of Massachusetts, Amherst, Mass. 01002 (School of Engineering & Graduate School of Engineering)	
B. S. Civil Engineering (Environmental Engineering)..... M. S. Civil Engineering (Environmental Engineering).....	Includes courses in Water and waste water demands, quantity, and quality, related machinery. Sanitary engineering, analysis, Radiological health engineering, Stream pollution.
(College of Liberal Arts) B. S. Environmental Health.....	Includes courses in Occupational health, Industrial hygiene, Sanitary engineering, Air pollution.
(College of Agriculture) B. S. Entomology.....	With an option of medical antomology major, or major in entomology concerning pest control, quarantine, etc.
(Graduate School) M. S. Public Health.....	Optional concentration in: (1) Administration of Health Services, (2) Community Health Education, (3) Environmental Health, (4) Epidemiology and Biostatistics, (5) Public Health Laboratory. Usually applicants are best prepared with undergraduate major in public health or the physical or biological sciences. Additional background in social and behavioral sciences is desirable.

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Training Programs	
Worcester Polytechnic Institute, Worcester, Mass. 01609 B. S. Civil Engineering..... M. S. Nuclear Engineering.....	Includes courses in; Elements of environmental engineering (sewage treatment, construction, water resources, design and operation of reservoirs, purification, air and stream pollution), Environmental engineering design projects, Engineering aspects of nuclear explosions.

FOOD TECHNOLOGISTS, FOOD & DRUG INSPECTORS & ANALYSTS

Making sure that the foods we purchase and the drugs we buy are safe and healthy is the province of the food and drug inspectors. They are the persons who act as watchdogs of our food and drug laws, inspecting to see that both the manufacturer and the distributer is maintaining the government standards required for good health. The experts who are engaged in improving food products are the food technologists. They work with food production, processing, packaging, distribution, preparation, and utilization of foods. It is the pharmacologist who specializes in improving drugs (see under Laboratory Positions later in this report).

Since the food inspector must examine food from its raw state through all its processing stages, he needs training in animal science as well as food processing. Most of the meat inspectors employed by the U. S. Department of Agriculture are veterinarians, though some chemists and bacteriologists are also engaged.

Behind the inspectors, who makes the on-the-spot check of the condition of the food, are the laboratory analysts who test inspector's samples more intensively.[1]

The inspector should have at least a bachelor's degree with a science major. He must be able to use scientific instruments and methods for on-the-spot testing. He is in contact with persons at all levels of processing, the manufacturer, the research chemist, assembly line foreman, warehouseman, store owner and handlers, court officers, and consumers.

Jobs are available in the U. S. Food and Drug Administration in their branch offices and in corresponding units in state agencies. Men performing the same functions are also employed in food processing plants. There are many openings for beginners with baccalaureate degrees in food sciences or chemistry and biology. These beginners are trained further on the job.

A food technologist may start out as a chemist or bacteriologist, or even as a process engineer in a canning factory. From such a position he may move to the research department where new products and processes are developed.

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FOOD TECHNOLOGISTS,
FOOD & DRUG INSPECTORS & ANALYSTS (contd.)

To enter the food technology field, a person must first have a B. S. degree in food science and technology. This means a good background in basic sciences such as chemistry, bacteriology, physics, nutrition, biology, and mathematics. This enables him to have an entry job as a food technologist. For a career in research, a master's or doctor's degree is almost a necessity, and for teaching it is mandatory.

Training Programs	
Massachusetts Institute of Technology. Dept. of Nutrition & Food Science, 211 Massachusetts Ave. Cambridge, Mass. 02139	
M. S. Nutritional Biochemistry and Metabolism.....	1 yr. course for students who have a B. S. in Life Sciences from M. I. T. or equivalent with major in nutrition, food science, food technology, chemistry, biology, or chemical engineering, or in one of the medical, agricultural or other physical sciences with a strong background in chemistry; or an M. D., D. D. S., D. M. D., or D. V. M. degree.
M. S. Food Science and Technology.....	
Ph. D. or Dr. Sc. in Food Science and Technology.....	Time varies. Student can complete in 3½ yrs. full time work, including the M. S. level.
Ph. D. or Dr. Sc. in Nutrition, Biochemistry & Metabolism.....	
See also course in Food toxicology and B. S. Life Sciences.....	Listed under Environmental Health Positions. Listed under Dietician & Nutritionist.
University of Massachusetts. Graduate School Amherst, Mass. 01002	
M. S. (Food Science & Technology).....1 yr. Ph. D. (Food Science & Technology)..... Ph. D. (Industrial Microbiology).....	Includes courses in: Microbiology and food processing; Thermobacteriology & food processing; Food packaging; Lipid chemistry; Food analysis, Food colorimetry, Biological & toxicological assay of food. Work in the area of dairy technology is taken in the Dept. of Food Science & Techn. Industrial microbiology is offered in Dept. of Food Science & Techn. in cooperation with the Institute of Agricultural & Industrial Microbiology.
(See under Dietetian, Nutritionist re: B. S. Foods in Business).....	

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Training Programs	
University of Massachusetts (contd.)	
M. S. Animal Science.....	Includes courses in Avian genetics, Adv. animal genetics, Fertility and fecundity, and control, Avian nutrition, Ruminant nutrition, Animal physiology, etc.
Ph. D. Animal Science.....	
M. S. Agricultural & Food Economics.....	
Ph. D. Agricultural & Food Economics.....	

HEALTH EDUCATOR

The health educator may work in community health education, be a school health educator, or assume the responsibilities of a school health coordinator.

The community health educator works directly with the public, the various community groups (churches, welfare organizations, labor unions, health agencies, the schools) to keep them aware of the health problems in their environment, and to stimulate solutions by the particular groups.

The school health educator, on the other hand, is concerned with classroom teaching of the students, the health program in the schools, and its effect on the community; while the school health coordinator or supervisor may work with all groups, make arrangements for workshops, but, specifically in the interest of the school child.

Besides a general background in all health sciences, sociology and psychology, the public health educator will be called upon to exercise leadership skills in communication, community development, community organization, group work, public speaking, and needs an understanding of public administration. Today, this means taking graduate work in a school of public health, leading to a master's degree. Entrance requirements to the graduate program often require some field experience. Some on-the-job training is offered by certain public health agencies, but this is in process of change.

Often dental hygienists take health education advance training to equip them for public health dental education. At present, with the exception of the Harvard program, no university in Massachusetts is accredited to give a graduate degree equivalent to a master in public health.

The public health educator is in a small but rapidly expanding profession with jobs in local, state and federal health departments, in international health programs, in voluntary health agencies, in agricul-

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HEALTH EDUCATOR (contd.)

tural extension services, in hospitals, clinics, in industry, anti-poverty and community action programs.

School health educators and coordinators work in the education system. They need, in addition to their undergraduate degree with background in biological, physical, social sciences and health education, a teacher's certificate from their state. This usually calls for certain educational courses taken in the undergraduate years. The beginning school health educator often has to assume other teaching responsibilities as few school systems can afford a full time person in this capacity. These may be in related fields: science, physical education or social studies. Increasingly, a master's degree in this field is being required.

Training Programs	
Boston University. School of Education and Graduate School of Education, Boston, Mass. 02215	
B. S. Education (Health Education).....	4 yrs.
M. S. Educ. (Health Education).....	1 yr.
Ph. D. Educ. (Health Education).....	
Harvard University. School of Public Health, 55 Shattuck St., Boston, Mass. 02115	
Program for Teachers of Preventive Medicine and Public Health.....	This program can lead to a M. P. H. or a S. M. in Hygiene. Specialization offered in epidemiology, health service administration, infectious diseases, nutrition, curriculum design. Courses include observation, student teaching, and research. 1 or 2 yr. program depending on educational background.
Northeastern University. College of Education, 360 Huntington Ave., Boston, Mass. 02115	
B. S. Educ. (Health Education).....	5 yrs. cooperative plan.
Smith College, Northampton, Mass. 01060	
B. S. Environmental Biology.....	Includes courses: Health education, Concepts of public health, Environmental health.

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Training Programs	
Springfield College, Springfield, Mass. 01109	
B. S. Edu. (Health Education).....	4 yrs. Includes course: Organization and administration of school health program, and field work in a public health agency for one term.
University of Massachusetts. Dept. of Public Health, Amherst, Mass. 01002	
B. S. (Community Health & Health Education).....	4 yrs.
M. S. (Community Health Education).....	2 yrs. (in process of being accredited by the American Public Health Association).

LABORATORY POSITIONS IN BASIC RESEARCH & CLINICAL TESTING

Research in the health-related sciences is a very wide field with limitless discoveries ahead in the nature of disease, in the controls to prevent disease, and in the myriad of ways to improve medical care and prevent sickness and accidents. Persons trained in the basic physical sciences (chemistry, biology and physics) are going in for "bio" specialties studying all phases of life processes.

Some of the titles of scientists doing health research are: anatomist, biomathematician, biostatistician, biochemist, biologist (cytologist, embryologist), biophysicist, chemist, demographer, cultural and physical anthropologists, economists, epidemiologist, entomologist and botanist, geneticist, health economist, health demographer, medical sociologist, microbiologist (bacteriologist, mycologist, parasitologist, virologist), nutritionist, pathologist, pharmacologist, physicist, physiologist, plant pathologist, plant physiologist public health statistician, radiologist, rehabilitation research specialist, zoologist.

The laboratory is the scientist's workshop where he spends the majority of his time and where, with his assistants, he carries on his widely assorted activities.

Laboratories doing basic research operate in universities, in private foundations, in some industries, in federal agencies; while the clinical laboratories in health departments, in hospitals, in industry and elsewhere provide essential tests as their primary function, but also are involved in basic research (particularly those institutions with teaching responsibilities).

Laboratory testing services are an integral part of the environmental health programs and other community health protection services administered by health departments. Most local and state health departments maintain their own laboratories for this purpose. Testing services are essential in medical care and all hospitals have clinical laboratories for this purpose. This is the province of the pathologist, clinical chemist, hematologist, clinical microbiologist, toxicologist, and their staff workers. Having these services immediately at hand is one of the great advantages of modern hospital care.

The scientists who direct the research have doctorate degrees, many had previous medical training and experience. Their chief assistants, who may also direct some of the projects, are usually persons with a master's degree, and who may be working toward their doctorates.

The individual with a bachelor's degree in the basic sciences can qualify for a beginner's or assistant's job in a laboratory. Recent college graduates without experience often begin their careers in a local hospital, laboratory, municipal or state public health department, or in a laboratory of a food processor or drug manufacturer, and the federal government has openings for recent science graduates in hospitals and laboratories throughout the country. These beginners learn on the job. They may be called "research assistants" or "laboratory technicians" or "technologists." They will work alongside of laboratory technicians and laboratory assistants without baccalaureate degrees but who have had specialized laboratory training after high school graduation and who have gained their position in

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the laboratory through experience. Other individuals may prefer to take, in their undergraduate program, specific courses leading to a baccalaureate degree, such as medical technologist, cyto-technologist, chemical-biological technologist. By taking the specific training, particularly that of the medical technologist, they will have had a short field experience during their training in the principle phases of laboratory testing: urinalysis, hematology (blood), serology (blood serum), blood bank, cytology (cells, esp. cancer), histology (tissues), bacteriology and parasitology.

With this clinical training exposure to various types of laboratory testing, the student can better choose his desired speciality and he is equipped to work in a laboratory and be assigned to tasks in many areas. The graduate with a general science degree may find that his first laboratory job will determine his specialty as he learns on the job the techniques of this assigned field.

Job titles in laboratories vary in each individual laboratory. The title does not reflect the degree of training of the recipient except in civil service positions. Since advancement in a laboratory depends so much on the ability of the individual, upward mobility takes many avenues. However, the background of science training has direct bearing on the ability to perform.

There are many rewarding functions, duties, and responsibilities in a laboratory for the assistants and technicians. The person who wishes to assume more responsibility will need, nevertheless, the background in science that a B. S. can give him as a starting level. He is then in a position to take advanced training in his specialty which opens the way to responsibilities of the top scientist. Many laboratories encourage advanced training and some hospital laboratories will pay the employee's tuition for further training.

Research in the social field of health requires training in the basic sciences as well as the specialization in: biostatistics, demography, economics, epidemiology, mathematics, sociology, etc. These scientists work alongside the medical, public health or environmental scientist in laboratories, or may be employed in government and university situations working independently.

The biostatistician works with statistical summaries to relate all aspects of health to current advances and prepares reports which give the practitioner and others the overall picture of health in his locality, nation, in the world, or in the medical situation within an institution. The demographer looks at the population as a whole, is concerned with its growth, over population and crowded conditions, their relation to health. The sociologist examines the social causes contributing to good or poor health, may work on efficiency patterns in health institutions; while the biomathematician develops models, methodology, and applies computer science to testing, research experiments and prognostication.

These scientists are all identifying obstacles and blind spots that stand in the way to realizing the full potential health gains of today's scientific progress.

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LABORATORY POSITIONS (contd.)

Training Programs	
(RESEARCH SCIENTISTS & ASSOCIATES) Only selected programs are listed below. In addition, there are 18 colleges and universities* in Massachusetts which offer master's degrees in one or more of the basic health sciences, each of which can lead to a research position in the health field. There are also 15 of these colleges and universities* offering doctoral programs in one or more of the basic health sciences: anatomy, biology, chemistry, mathematics, physics, and physiology. By consulting the catalogs or these institutions, the student can find the range of topics each program offers and the individual requisites for admission to the graduate programs. (See also in this inventory description of other programs leading to research, under the sections on: Environmental Health, Food Technologist, Psychologist, Rehabilitation Research).	
Boston College, Graduate School of Arts & Sciences, Chestnut Hill, Mass. 02177 M. S. Biology..... Ph. D. Biology.....	Immunology and parasitology, Instrumentation analysis, Radiation biology and experimental embryology, Bacteriology, Cell physiology, Biochemistry and photosynthesis, Biophysical chemistry, Cellular physiology, Immunochemistry, Endocrinology, Biochemistry of protozoa, Electron microscopy, Cytology an cytogenetics. There is a Cancer Research Institute within the Department of Biology.
Boston University, Charles River Campus, Boston, Mass. 02215 (Graduate School of Arts & Sciences Div. of Medical Sciences) M. A. and Ph. D. in six options.....	Anatomy, Biochemistry, Microbiology, Pathology, Pharmacology, and Physiology.
M. A. and Ph. D. in Biology.....	
M. A. and Ph. D. in Sociology.....	(Department of Sociology). Includes courses in: Sociology of the medical professions, Social and cultural factors in health and illness, Methods of social research, Advanced statistics, Sociology of the organization of medical practice - structure and operation of hospital, private practice, group practices and clinic settings.

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* (1) Doctoral program. (2) Master's program. In the basic health sciences

2 Amherst	2 Holy Cross College	1,2 Northeastern Univ.	1,2 Wellesley College
1,2 Boston College	1,2 Harvard University	1,2 Smith College	2 Williams College
1,2 Boston University	1,2 Lowell Tech. Inst.	2 SE Mass. Techn. Inst.	1,2 Worcester Polytechn. Inst.
1,2 Brandeis University	1,2 Mass. Inst. of Techn.	1,2 Tufts University	
1,2 Clark University	1,2 Mt. Holyoke College	1,2 Univ. of Mass.	

Educational Training Programs	
(RESEARCH SCIENTISTS & ASSOCIATES) (contd.)	
Boston University (contd.) (School of Graduate Dentistry Division of Medical Sciences) Ph. D..... C. A. G. S.....	Basic research related to oral problems. Certificate of advanced graduate study in oral problems available in one of nine areas; with clinical facilities at University Hospital, Reisman Dental Clinic, Beth Israel Hospital Dept. of Dental Health, Town of Brookline, Boston State Hospital, Kennedy Memorial Hospital, Forsyth Dental Center.
D. Sc. Dentistry..... 3 yrs. after dental school grad. M. Sc. Dentistry. Programs for research as well as practice.....	Emphasis on clinical, academic and research competency. (1½ yrs. course work, 1½ yrs. research) Oral surgery (1 yr.); Anesthesiology (1 yr.); Periodontology (2 yrs.); Orthodontics (2 yrs.); Endodontics (2 yrs.); Prosthetic dentistry (2 yrs.); Oral pathology (2 yrs.); Public health dentistry (2 yrs.); Pedodontics (2 yrs.).
Boston University. School of Medicine, 80 East Concord Street, Boston, Mass. 02118 Post-sophomore fellowships in laboratory research.....	During medical training a student can elect to spend his second or third year in laboratory research.
Brandeis University, Graduate School of Arts & Sciences, Waltham, Mass. 02154 M. A. Biochemistry, Biology, Biophysics.. Ph. D. Biochemistry, Biology, Biophysics. Postdoctoral medical research.....	In biochemistry, biology, chemistry, microbiology, Offered at the Brandeis Medical Science Research Center.

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LABORATORY POSITIONS (contd.)

Training Programs	
(RESEARCH SCIENTISTS & ASSOCIATES) (contd.)	
Harvard University, School of Public Health, 55 Shattuck St., Boston, Mass. 02115	
M. P. H. (Demography and Human Ecology)...	Prerequisite for M. P. H. program is an M. D. or equivalent background in biological sciences. Course is one year.
Dr. P. H. (Demography and Human Ecology)..	
M. P. H. with concentration in biostatistics.....	
Dr. Sci. Hygiene.....	Advanced work in biostatistics research.
S. M. in Hygiene: 1 yr.....	For those with B. S. and 2 yrs. field experience. Specialization in: Biostatistics, Demography, Epidemiology, Infectious disease, Maternal and child health, Microbiology, Nutrition, Occupational medicine, Public health practice, Radiological health, Toxicology, Tropical public health.
Harvard University. Graduate School of Arts and Sciences. Div. of Medical Sciences, 25 Shattuck St., Boston, Mass. 02115	
A. M. in basic sciences.....	Anatomy, Bacteriology, Biochemistry, Neurobiology, Pathology & parasitology, Pharmacology, Physiology. Includes courses in Psychological & social aspects of medicine, Research models, Data-analysis, Computer methods, Drug abuse.
Ph. D. in basic sciences.....	
A. M. Social Relations.....	
Ph. D. Social Relations.....	
Massachusetts Institute of Technology 211 Massachusetts Ave., Cambridge, Mass. 02139	
Postdoctoral.....	Fellows work at the Clinical Research Center on a unit of experimental medicine. Emphasis is on endocrinology and metabolism in relation to human disease.
Graduate students also work at this unit..	Research jobs are open to graduate nutritionists, food scientists, university teaching and research,

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LABORATORY POSITIONS (contd.)

Training Programs	
(RESEARCH SCIENTISTS & ASSOCIATES) (contd.)	
Massachusetts Institute of Technology (contd.)	research in government, private and industrial laboratories, process development in the food and related industries, work with international agencies. Cooperation with the Pan American Health Organization at the Institution of Nutrition of Central America and Panama.
Northeastern University, 360 Huntington Ave., Boston, Mass. 02115	
(Graduate Sch. of Arts & Sciences)	
M. S. Health Sciences.....	A part-time evening program including courses in environmental health; serology, immunology, environmental microbiology, parasitology, medical microbiology.
M. S. in biological sciences.....2 yrs.	Full time program in areas of biochemistry, botany,
Ph. D. in biological sciences.....	ecology, genetics, microbiology, physiology, zoology
M. A. Sociology, or	
M. A. Sociology (Criminology).....	2 yrs. Research methods, Models.
(Graduate School of Pharmaceutical Sciences).....	
M. S. Pharmacy.....	In Hospital pharmacy, Industrial pharmacy, Medicinal chemistry, Pharmacology.
Smith College. Graduate School, Northampton, Mass. 01060	Specialization in: Anatomy, Environmental biology,
M. A. (Biological Sciences).....	Microbiology. Program in cooperation with Univ. of
Ph. D. (Biological Sciences).....	Massachusetts, Amherst, Mt. Holyoke.
Tufts University, Medford, Mass. 02155	
(Graduate School of Arts & Sciences)	
M. A. Sociology.....	Includes courses in: Population, Sociology of
Ph. D. (Medical Sociology).....	medicine.

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LABORATORY POSITIONS (contd.)

Training Programs	
(RESEARCH SCIENTISTS & ASSOCIATES) (contd.)	
Tufts University (contd.) (School of Medicine in coop. with Graduate School) M. S. and Ph. D. in 7 basic sciences.....	Anatomy, Biochemistry, Microbiology, Molecular basis of biological phenomenon, Pharmacology, and Physiology. Combined program of M. S. and Ph. D. takes 7 yrs. (Two years in medical school, two years graduate work, resume medical school for last two years, plus research and dissertation).
University of Massachusetts. Graduate School, Amherst, Mass. 01002	
M. S. Microbiology.....30 credits..	Both programs include courses in anti-biotics, microbial cytology, microbial genetics.
Ph. D. Microbiology.....	
M. S. (Epidemiology & Biostatistics)2 yrs..	Joint program in Depts. of Public Health & Statistics. See listing under Environmental Health. Includes courses in Public health statistics, Epidemiological methods.
M. S. (Sociology).....30 credits..	Includes courses in Research methods, Data collection in social research, Survey design, Demography, Industrial sociology, Sociology of mental disorders.
Ph. D. (Biological Sciences).....	See above under Smith College, cooperative program.

Training Programs

(LABORATORY SUPPORTIVE STAFF)

The inventory does not include all the baccalaureate degree programs in the basic sciences which lead to beginner's jobs as research assistants and laboratory technicians. The student can consult the catalogs of the many colleges in Massachusetts which offer such degrees.

CHEMICAL-BIOLOGICAL TECHNOLOGIST

Northeastern University, Lincoln College and University College
360 Huntington Ave., Boston, Mass. 02115

B. S. Chemical-Biological Technology..... 7 yrs. part-time. Prepares students for employment opportunities in clinical, hospital, industrial, and pharmaceutical laboratories dealing with analytical, production, and research function.

Newton College of the Sacred Heart
885 Centre St., Newton, Mass. 02159

B. A. Biological Sciences..... 4 yrs. Includes course in hematology preparing for National Registry exam: in histology techniques, in cytology. In the senior year or summer period, a few selected students can take the oral research program of the Science Resources Foundation, Cambridge (funded by U. S. Public Health Service and the Council on Tobacco Research).

CYTOTECHNOLOGIST

(See also Part I for courses requiring 2 yrs. college plus clinical training)..

Northeastern University. Lincoln/University College, 360 Huntington Ave., Boston, Mass. 02115

B. S. Cytotechnology..... 7 yrs. part-time. At the end of the fifth year, the student spends six months in an approved hospital school of cytotechnology and six months internship among the several hospitals which constitute the Boston School of Cytotechnology. He is eligible for registry examination of the American Society of Clinical Pathologists at the end of the

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LABORATORY POSITIONS (contd.)

Training Programs	
Northeastern University (contd.....	hospital training period, but must finish his seventh part-time year before he gets his baccalaureate degree.
MEDICAL TECHNOLOGIST	
American International College 170 Wilbraham Rd., Springfield, Mass. 01109 B. S. Medical Technology.....	4 yrs. (incl. 1 yr. at hospital).
Anna Maria College, Paxton, Mass. B. S. Medical Technology.....	4 yrs. (incl. 1 yr. at a hospital).
Atlantic Union College, South Lancaster, Mass. 01561 B. S. Medical Technology.....	4 yrs. (incl. 1 yr. at a hospital).
College of our Lady of the Elms Chicopee, Mass. 01013 B. S. Medical Technology.....	4 yrs. (incl. 1 yr. at a hospital).
Eastern Nazarene College, Wollaston Park, Quincy, Mass. 02170 B. S. Medical Technology.....	4 yrs. (incl. 1 yr. at a hospital).
Merrimack College, Wilsons Corner & Elm St., North Andover, Mass. 01845 B. S. Medical Technology.....	4 yrs. (incl. 1 yr. at a hospital).
Northeastern University, Lincoln/University College, 360 Huntington Ave., Boston, Mass. B. S. Medical Technology.....	7 yrs. part-time, the sixth year is spent full-time (12 months) at an affiliating hospital. 5 yr. cooperative plan program also.

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LABORATORY POSITIONS (contd.)

Training Programs	
MEDICAL TECHNOLOGIST (contd.)	
Simmons College, 300 The Fenway, Boston, Mass. 02115	
B. S. Medical Technology.....	4 yrs. (incl. 1 yr. at Beth Israel Hospital).
Diploma in Diagnostic Lab. Science.....	College graduates with sufficient training in science may be admitted to the final year of the undergraduate program in medical technology. They are eligible for the diploma when the program is completed.
Southeastern Massachusetts Technological Institute, North Dartmouth, Mass.	
B. S. Medical Technology.....	4 yrs. (incl. 1 yr. at a hospital).
Springfield College, Springfield, Mass. 01109	
B. S. Medical Technology.....	4 yrs. (incl. 1 yr. at a hospital).
Stonehill College, North Easton, Mass. 02356	
B. S. Medical Technology.....	4 yrs. (incl. 1 yr. at a hospital).
State College at Fitchburg, Fitchburg, Mass Mass. 01420	
B. S. Medical Technology.....	4 yrs. (incl. 1 yr. at a hospital).
Suffolk University, 41 Temple St., Boston, Mass. 02114	
B. S. Medical Technology.....	4 yrs. (incl. 1 yr. at a hospital).
Worcester Junior College, 769 Main St., Worcester, Mass.	
Students qualify for the Registry of Medical Technologists.....	3 yrs. at college, 12 mos. additional at an approved hospital. Receive associate degree.
University of Massachusetts, Amherst,Mass.01002	
B. S. Medical Technology.....	4 yrs. (incl. 1 yr. at a hospital). Or student may take four years liberal arts and his hospital internship the year following.

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LABORATORY POSITION (contd.)

Training Program

MEDICAL TECHNOLOGIST (contd.)

Affiliating hospitals who offer the 12-month internship in their approved Hospital Schools of Medical Technology

Berkshire Medical Center, Pittsfield General Hosp. Unit, 725 North St., Pittsfield, Mass. 01201
Beth Israel Hospital. Pathology Dept. 330 Brookline Ave., Boston, Mass. 02215
Beverly Hospital Herrick & Heather St., Beverly, Mass. 01915
Bon Secours Hospital Methuen, Mass. 01844
Carney Hospital 2100 Dorchester Ave., Boston, Mass. 02124
Farren Memorial Hospital Main St., Turners Fall, Mass. 01376
Faulkner Hospital 1153 Centre St., Jamaica Plain, Mass. 02130
Framingham Union Hospital 25 Evergreen St., Framingham, Mass. 01710
Franklin County Public Hospital 164 High St., Greenfield, Mass. 01301
Henry Heywood Mem. Hosp., Dept. of Laboratories 242 Green St., Gardner, Mass.
Lawrence General Hospital 1 Garden St., Lawrence, Mass. 01842
Malden Hospital Hospital Rd., Malden, Mass. 02148
Mercy Hospital, Laboratory 233 Carew St., Springfield, Mass.
Massachusetts General Hospital Fruit St., Boston, Mass. 02114
New England Deaconess 185 Pilgrim Road, Boston, Mass. 02215
New England Hospital Columbus Ave., Roxbury, Mass. 02119
New England Center Hospitals (Boston Dispensary) 171 Harrison Ave., Boston, Mass. 02111
New England Memorial Sanitarium & Hospital 5 Woodland Rd., Stoneham, Mass. 02180
Newton-Wellesley Hospital 2014 Washington St., Newton Lower Falls, Mass.
Norwood Hospital 800 Washington St., Norwood, Mass. 02062
Quincy City Hospital 114 Whitwell St., Quincy, Mass. 02169
Salem Hospital 31 Highland Ave., Salem, Mass. 01970
Springfield Hospital 759 Chestnut St., Springfield, Mass. 01107
St. John's Hospital Stackpole St., Lowell, Mass. 01852
St. Joseph Hospital 220 Pawtucket St., Lowell, Mass. 01854
St. Vincent Hospital 25 Winthrop St., Worcester, Mass. 01604
Truesdale Hospital 1820 Highland Ave., Fall River, Mass. 02720
University Hospital 750 Harrison Ave., Boston, Mass. 02118
Worcester City Hospital Sch. 26 Queen St., Worcester, Mass. 01610
Veterans Administration Hospital 150 S. Huntington Ave., Boston, Mass. 02130

MEDICAL LIBRARIAN

The medical librarian (health science librarian) is responsible for seeing that the hospital or institutional library provides the reference materials needed by the professional staff. He orders, classifies, indexes the books, reports, and medical journals, keeping files and loan records. He, or she, assists the physicians, medical students, nurses, dentists, pharmacists, medical specialists and research workers by helping them track down any needed data; and he answers questions by mail and telephone.

Medical libraries may be in hospitals, departments of public health, pharmaceutical houses, insurance companies, general biomedical research institutions, universities and voluntary health agencies.

No college or university in Massachusetts offers the specialized bibliographic training that qualifies for a certificate as a medical librarian. There are three levels of certification: (1) graduates of the approved course, taken after receiving their M. S. in library science, (See below), (2) those who have taken an additional 9-12 month internship, and (3) those whose work and study grants them an advanced degree (beyond the M. S.). The Massachusetts student, however, may prepare for and take a master's degree program in general library science in this state, then transfer for the specialized training in approved courses for certification at one of the 16 colleges offering the course in the United States and Canada.

Or, since the certification is not compulsory, the student may elect, during his master's program in library science to take courses in "special libraries" and "science and technology materials". With this background, many become medical librarians in the various types of health science libraries.

To prepare for the medical specialization, the library candidate should take in his undergraduate years, a major or minor in one of the life sciences plus the basis courses in physics and chemistry.

The term hospital librarian is often used in place of medical librarian to designate the supervisor of a library staff in a large institution, which may have several library units and a number of medical librarians working on his staff. Hospitals also employ general librarians as patient's librarians. They do not need medical science specialization, and quite frequently, they are volunteers who also help with the book cart service.

Training Programs	
(GENERAL LIBRARY SCIENCE)	
Simmons College, School of Library Science 300 The Fenway, Boston, Mass. 02114 M. S. Library Science.....	4-5 summer sessions, or combination of summer and term-time courses: 36 semester hrs. of graduate courses, 32 semester hours of library.

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MEDICAL LIBRARIAN (contd.)

Training Program
MEDICAL LIBRARIAN PROGRAMS Prerequisite: M. S. in Library Science. The asterisk indicates the programs that are approved for the first level of certification by the Medical Library Association.

*Case Western Reserve University, Cleveland, Ohio
*Catholic University of America, Washington, D. C.
*Columbia University, New York, N. Y.
Drexel Institute of Technology, Philadelphia, Pa.
*Emory University, Atlanta, Ga.
*University of California at Los Angeles, Cal.
University of Chicago, Chicago, Ill.
*University of Illinois (Chicago Medical Ctr.)Chicago
University of Maryland, College Park, Md.
University of Michigan, Ann Arbor, Michigan
University of Minnesota, Minneapolis, Minn.
*University of North Carolina, Chapel Hill, N. C.
University of Oklahoma, Norman, Okla.
*University of Pittsburgh, Pittsburgh, Pa.
*University of Southern California, Los Angeles,
University of Toronto, Toronto, Cal.
*Wayne State University, Detroit, Michigan

MEDICAL RECORD LIBRARIAN

The "medical record" is the permanent health record of a patient's injury or illness. It is used for patient care, research and legal purposes. It includes medical reports describing his progress, x-ray and laboratory reports, medications, and specialized data.

The medical record librarian is responsible for insuring that complete medical records are obtained, designing and maintaining a filing system, to make records available on a minute's notice to authorized persons, preparing them for future use, and preparing statistics and other reports as needed. In the larger hospitals, she or he is an "office manager" for the staff of the record department. In a smaller hospital, she may perform the duties herself. Besides the hospital, there are positions with nursing homes, clinics, health centers, drug firms, universities, and research firms.

To qualify as a professional registered medical record librarian, the candidate attends one of three types of American Medical Association approved schools: (1) A college or university baccalaureate program with a major in medical record science; (2) A sixty semester hour college program, plus a twenty-month hospital school program leading to a certificate in medical record science; (3) A postgraduate program for college graduates, leading to a certificate in medical record science.

Professional recognition as a registered medical record librarian requires, in addition to certification, the passing of the national examination of the American Association of Medical Record Librarians. This examination is offered annually.

The demand for medical record librarians far exceeds the supply, so the qualified graduate has a choice of many well-paying jobs.

Part I of this survey lists the hospitals in Massachusetts which offer the hospital year course. It also lists training for the medical record technician who serves as assistant to the librarian.

Training Programs	
Northeastern University, University College 360 Huntington Ave., Boston, 02115	
B. S. Medical Record Science.....	5 yr. cooperative plan, or 8 yrs. evening classes (174 credits).
No degree program.....	2 yr. college (54 credits), plus twelve months hospital training (500 hrs. supervised practice).

MENTAL HEALTH POSITIONS

Psychiatry, psychiatric nursing, psychiatric social work, and psychology are the major professional fields offering positions within the mental health services. Occupational therapists and other rehabilitation specialists round out the team.

These professionals work with the more seriously emotionally disturbed in the mental hospitals of Massachusetts, or special sections of general hospitals. They may be engaged in preventive work in community or hospital mental health clinics, in the schools, or by seeing individuals in private offices.

New kinds of drug therapy and other developments in treatment have broadened the scope of the mental health field and have placed the research scientist in the important role of discovering what promotes mental health or causes mental illness. Promoting mental health and preventing disorders demands an early recognition of danger signs. The public health nurse or the school nurse is particularly helpful in this regard.

Closely associated to services to the mentally ill, is the care of the mentally retarded who became this way because of abnormalities that happened before birth or shortly therafter. Most of these children can now stay in their homes if they get early diagnosis, treatment and training. Teachers with special training are needed to do this work, both in the public schools and in special institutions.

Training for the student who desires to work in one of the many mental health positions at the professional level, is listed in this inventory under the following job positions: nurse specialization, physician (psychiatrist), psychologist, rehabilitation positions (occupational therapist, recreation therapist, teachers of emotionally disturbed and mentally retarded) and social workers.

NURSE SPECIALIZATION

The baccalaureate degree nursing program provides knowledges, skills, and understandings that not only make the baccalaureate nurse an effective professional nurse in the hospital, home and community, working with patients and families, but also enables her to participate in organizing, planning and directing the work of nursing technicians and assistants.

The baccalaureate program provides a foundation for graduate study in nursing and other disciplines through which the nurse may become prepared for positions in a clinical specialty, teaching, supervision, administration, consultation, and research.

In some of the programs, listed below, the employed professional registered nurse who is a graduate of a hospital nursing school is admitted to take courses at the college level for two and a half years, to earn her B. S.

Training Programs	
Boston College, Chestnut Hill, Mass. 02167 (School of Nursing)	
B. S. Nursing.....	4 yrs. plus one intersession in an affiliating public health situation.
(Graduate Sch. Arts & Sciences. Dept. Nursing)	
M. S. Nursing (Maternal-Child Health, Psychiatric-Mental Health).....	2 yrs. (4 semesters). Advanced study for clinical specialization, teaching, and administrative roles.
M. S. Nursing (Community Health, Medical-Surgical).....	1½ yrs. (3 semesters + one summer). Prepares for teaching, and administrative roles.
Boston University. School of Nursing, Commonwealth Ave., Boston, Mass. 02215	
B. S. Nursing.....	5 years
M. S. Nursing.....	Medical-surgical, 2 yrs.; Maternal and Child Health 2 yrs.; Rehabilitation, 2 yrs. including a clinical rehabilitation period; Public health nursing, 2 yrs.; Supervision of hospital nursing services, Administration of hospital nursing services, Coordination of inservice education, Psychiatric nursing.
Dr. Nursing Science (Psychiatric Nursing)	
C.A.G.S. (Certificate of Advanced Graduate Study), for rehabilitation nursing.....	After the M. S., one semester.

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NURSE SPECIALIZATION (contd.)

Training Programs	
Eastern Nazarene College, Wollaston Park, Quincy, Mass. 02170	
B. S. and M. A. Nursing.....	
Mount Holyoke College, South Hadley,Mass. 01075	
B. S. Nursing.....	4 yrs. Affiliates with the Hartford Hospital School of Nursing, Hartford, Conn.
Newton College of the Sacred Heart, Newton, Mass. 02159	
B. S. Nursing.....	4 yrs. Major in biology, chemistry, psychology or sociology. 2 yr. program for graduates of nursing schools, plus one summer.
Northeastern University. College of Nursing 360 Huntington Ave., Boston, Mass. 02114	
B. S. Nursing.....	5 years cooperative plan.
Simmons College. Dept. of Nursing, 300 The Fenway, Boston, Mass. 02115	
B. A. Nursing.....	4 years (including fourth year internship).
State College at Fitchburg, Fitchburg, Mass. 01420	
B. A. Nursing.....	4 years (including clinical practice).
University of Massachusetts. School of Nursing Amherst, Mass. 01002	
B. S. Nursing..... (Graduate School)	4 yrs.
M. S. Nursing.....	To prepare for (a) clinical specialization, (b) supervision and administration of nursing, or (c) teaching of nursing.

OPTOMETRIST

The optometrist is trained to examine the eyes in order to determine the presence and extent of vision problems, diseases and other abnormalties. If the diagnosis requires medical treatment, the patient is referred to the proper medical authority. Otherwise, he restores, preserves, and enhances the vision by individually prescribing and adapting corrective lenses, contact lenses, and by visual training.

The optometrist provides a complete service through supervision of his prescription for corrective and contact lenses, and their proper alignment and adjustment. Most optometrists are in private practice. Some serve in hospitals, rehabilitation centers, and research.

Optometrists have developed many aides for children with seriously impaired vision, as well as for adults. They have been largly responsible for the research and development of contact lenses. Some specialize in this area, while others include it in their practice. Another specialty is vision training. This treatment is done through prescribed eye exercises for persons with squint (crossed eyes) or whose eyes need coordinating. Such training is helpful for those with reading problems.

The one training program in Massachusetts for optometrists is a four-year course with a two-year college pre-requisite, a total of six years. The B. S. is granted at the same time as the O. D. at the end of the six years, although it is earned two years earlier. Requirement for admission to the Massachusetts College of Optometry includes courses in English, mathematics, physics, chemistry, biology, or zoology. The graduate takes a state examination for his license to practice.

The opthamologist differs from the optometrist in that he treats the disease of the eyes and must have an M. D. (See section on Physician). An oculist is a medical practitioner, specializing in eye examination and treatment of pathological eye problems, but who has not been certified by the American Board of Opthamology. Very few of these are still in practice.

Massachusetts College of Optometry, 178 Newbury St., Boston, Mass. B. S. Optometry & O. D. (Doctor of Optometry).....	4 yr. program, with a prerequisite of 2 years college.

PHARMACIST

The pharmacist is trained to compound medicines (preparing tablets, powders, capsules, ointment and solutions) according to prescriptions written by physicians, dentists and veterinarians. He must understand the composition of the drugs, their chemical properties, and be able to test them for purity and strength. He also provides medicine or medical products that do not need a prescription.

As a purchaser and distributor of hundreds of types

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of drugs and health related items, he informs doctors of their availability, and provides the public with information on health matters.

Most pharmacists practice in community pharmacies. The pharmacist usually starts as an assistant to the owner or manager. With experience, he assumes managerial responsibility and is later in a position to transfer to a larger establishment or to own or part-own a retail pharmacy of his own.

Pharmacists also work in hospital pharmacies and for pharmaceutical manufacturers and wholesalers in government agencies, or teach in colleges of pharmacy. The hospital pharmacist may have other duties in addition to preparing, dispensing, purchasing, and keeping track of supplies. He may have teaching responsibilities with the hospital staff and students, may be asked to handle laboratory routines, sterilize supplies, and take a more active role in consulting with physicians on the availability of drugs and supplies.

Professional training to become a pharmacist takes five years after graduation from high school. The five year program of study leads to the degree of Bachelor of Science in Pharmacy. Following graduation, a pharmacist must take the state board examination leading to his licensure. He needs one year of experience in pharmacy in order to take the examination, and may use summer months during his education to achieve this. Further advanced study can lead to the degrees of M. S. in Pharmacy and Ph. D. in Pharmacy.

The pharmacist should not be confused with the pharmacologist, who is a doctor engaged in research measuring the effect of drugs and developing new products (See Physician and Laboratory Positions in this inventory).

Training Programs	
Hampden College of Pharmacy, 694 Chicopee St., Willimansett, Mass. 01040	
B. S. Pharmacy.....	5 yrs. 1st yr. pre-pharmacy. 4 yrs. of professional courses.
Massachusetts College of Pharmacy, 179 Longwood Ave., Boston, Mass. 02115	
B. S. Pharmacy.....	5 years.
M. S. Pharmacy.....	30 sem. hrs. of graduate work, including a thesis.
Ph. D. Pharmacy.....	60 sem. hrs. plus research and thesis (incl. M. S.)
Northeastern University. College of Pharmacy 360 Huntington Ave., Boston, Mass. 02115	
B. S. Pharmacy.....	5 yrs.
M. S. Pharmacy.....	Specialization in: hospital pharmacy, industrial pharmacy, medicinal chemistry, or pharmacology.

PHYSICIAN

"Modern medical education, research and practice require a depth and breadth of knowledge which is so bewildering that no one individual can hope to master its entire scope... Students of U. S. medcal schools today receive the most thorough and rigorous training and education offered in the world...

"The profession attracts young people to it because of the deep sense of purpose, prestige, and excellent standard of living which many physicians enjoy. Since the physician's work centers around the life and well-being of his patients, he must bear heavy responsibility. His time often is not his own. His medical education never ends for he must keep abreast of the latest scientific and other developments in medicine so that he can provide his patients with the best possible care...

"If you choose medicine as your life's work, you must be prepared to take at least nine years of intensive study beyond the high school level. This includes four years of college study, four in medical school, and one year internship at a hospital. Those desiring to enter medical specialty fields, such as surgery or psychiatry (see listing below) are required to serve from two to five additional years in residency training at a hospital. Most physicians are in their late twenties before they can launch their medical careers..."[3]

The state licensing boards, most of them, require some internship after the M. D. and the candidate must pass a licensing examination before he is eligible to practice... The examination offered by the National Board of Medical Examiners is recognized in most states as fulfilling part or all of the requirements for licensure. The final authority in each state, however is the board of medical examiners.

This inventory does <u>not</u> list the many Massachusetts training opportunities for physician specialization. This information is obtainable from the medical schools.

Training Programs	
Boston University. School of Medicine 80 East Concord St., Boston, Mass. 02118	
M. D.....	4 yrs. after a premedical baccalaureate degree.
M. D. and B. A.....	6 years program after high school. The first two years are taken at the College of Liberal Arts, the third and fourth years at the School of Medicine including three twelve-week summer sessions in liberal arts at the college. The last two years are at the medical school. On completion, the student receives both his M. D. and his B. A. The plan is financed by the Rockefeller Foundation and the Commonwealth Fund.

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Training Programs	
Boston University. School of Medicine (contd.)	Special courses in Rehabilitation Medicine are required of medical students. The Preventive Health courses include occupational health, and a one month assignment to home medical service to indigent patients. Somatology (oral disease) can be elected.
Harvard University. Medical School 25 Shattuck St., Boston, Mass. 02115 M. D.....	4 years after a premedical baccalaureate degree. Elective courses in public health at the School of Public Health and a required course in Tropical Public Health.
Tufts University. School of Medicine 136 Harrison Ave., Boston, Mass. 02111 M. D.....	4 years after a premedical baccalaureate degree. Elective courses in rehabilitation. A two-month summer clerkship at the Rehabilitation Institute can be elected and stipends are available under the U. S. Vocational Rehabilitation Administration. In the required preventive medicine courses, occupational medicine is included. A two month clerkship in a community setting is also required as part of the medical curriculum.
(PRE-MEDICAL TRAINING)	
26 colleges and universities in Massachusetts specifically list in their catalogs guided pre-medical programs. Requirements for admission to the Massachusetts schools of medicine are almost identical: Four sciences (General chemistry, Inorganic chemistry, Biology, and Physics), Calculus, and English. A reading knowledge of a foreign language is required by two. All recommend a broad background in the humanities and social sciences, specifying art, religion, psychology, economics, rather than anticipating any medical science courses. Other science courses recommended are Physical chemistry, Advanced chemistry, Advanced physics, Comparative anatomy, Genetics, and Embryology.	

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PHYSICIAN (contd.)

Training Programs
(PHYSICIAN SPECIALIZATION)
Administrative medicine Anesthesiology Colon and rectal surgery Dermatology Internal medicine (or its sub-specialties: Allergy gastroenterology, Pulmonary disease) Neurological surgery Obstetrics & Gynecology Ophthalmology Orthopedic surgery Pathology or sub-specialty: Forensic pathology Pediatrics, with sub-specialties of Pediatric allergy or Pediatric cardiology Physical medicine and rehabilitation Preventive medicine with sub-specialties of Aviation medicine, Occupational medicine or Public health medicine Psychiatry and Neurology with sub-specialties: Diagnostic radiology and Therapeutic radiology Surgery Thoracic surgery Urology
While this inventory does not list the health institutions which offer residencies, fellowships, and other postdoctoral training in Massachusetts for physicians, under the job categories of "Environmental Health Positions" and "Laboratory Positions" are listed certain training courses for graduate medical students who plan to go into aspects of preventive medicine and into research as a career.

PSYCHOLOGIST, & COUNSELORS

Psychology is concerned with how people act, and why they act the way they do - their feelings, thinking, and behavior. In the health field, psychology concerns both prevention of mental illness and its diagnosis and treatment. Psychology is a nonmedical science, whereas psychiatry is a branch of medicine.

About one-third of all psychologists in the United States in 1965 were engaged in health activities.[2] Most of those in the health field are clinical psychologists who work in hospitals, clinics, or medical centers and private offices. They help the individual who is maladjusted or a misfit to find new and better habits of behavior so that he can live his life in a more satisfying way. The clinical psychologist works directly with the patient. He gives tests and does psychotherapy. He may talk with family, friends and neighbors, teachers, and others to round out the background. In the medical setting, he usually works with the psychiatrist, social worker, and other professionals assigned to the case, but he also may assume overall responsibility and provide counseling and psychotherapy. The counseling psychologist may work in a clinical setting, but works more frequently in schools, colleges,

in industry and community agencies, helping fit individuals to jobs, establishing learning and work patterns, tackling everyday problems and decisions. He also works with the rehabilitation of persons disabled by accidents or illness.

The school psychologist or counselor must have a knowledge of educational methodology as well as some clinical and counseling experience, and will usually take professional training in a graduate school of education or department of psychology.

On the other hand, the experimental psychologist is involved in the development of behavior conditioning in both hospitals, institutions for the mentally ill and schools for the mental retarded. This is a growing field in helping shape behavior through the use of conditioning methods.

Another type of psychologist is the psychometrician who devises tests for measuring people's mental emotional, and social characteristics. He also is employed to administer the tests, usually working under or with the clinical or counseling psychologist. These specialists are a small proportion of the psychologist in the health field.[2]

The social psychologist is mainly concerned with group reactions and behavior - the way social attitudes develop, how families and communities act and react upon one another. There are, also, only a small (but growing) number involved in health projects.[1]

Some practicing psychologists have had only one or two years of graduate study in psychology, but the usual requirement is four years leading to a Ph. D. degree and at least a one year internship. The top in formal recognition is the Diplomate in Psychology, earned after at least five years of experience after a Ph. D, and the taking of an examination before the American board of Examiners in Professional Psychology. There is a growing need for research assistants and testing assistants in psychology who hold a master's and even a bachelor's degree in psychology.

Training Programs	
Assumption College, 500 Salisbury St. Worcester, Mass. M. S. Guidance & Psychology.....	2 yrs. Includes teaching-counseling the emotionally disturbed child and the mentally retarded, counseling in the mental health setting. The college conducts the Institute on Problems of Teaching the Perceptually Handicapped, for school administrators and teachers.
Seminars held on mental health.....	For educators, nurses, other health specialists.

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PSYCHOLOGIST, & COUNSELORS (contd.)

Training Programs	
Boston College. Graduate School of Arts & Sciences, Chestnut Hill, Mass. 02114	
(Dept. of Education)	
M. S. Educ. (Secondary & College Counselor Educ., Elem. Guidance & School Psychology)	Prepares for school and college counselors, and also for counseling in non-school settings (employment, rehabilitation, community agencies). Includes courses in mental health and hygiene, the abnormal. 36 hrs.
C. A. E. S. (Cert. of Adv. Educ. Specialization).....	30 hrs. Professional preparation which counselors need beyond the master's degree.
Ph. D. Educ. or D. Educ. (Counselor Education and Counseling Psychology).....	Min. of 48 hrs., plus dissertation. Prepares for counseling psychologist. Prerequisites: 3 yrs. of teaching experience.
(Dept. of Psychology)	
M. S. (Social Psychology).....	48 credits, including 12 cr. of field work. Community social psychology. 4 yrs. residency. 60 hours to qualify for membership in Amer. Psych. Society. Major in counseling, minor in evaluation and measurement. Other minors also available.
Ph. D. (Social Psychology).....	
Boston University, 705 Commonwealth Ave., Boston, Mass. 02215	
(Graduate Schools of Arts & Sciences Department of Psychology)	
M. A. Psychology.....	General, experimental, clinical. 1 yr.
Ph. D. Psychology.....	Experimental and physiological, Personality and social psychology, Clinical psychology, Counseling psychology.
Ph. D. in clinical and counseling, APA-approved.	
(Graduate School of Education)	
M. Educ. (Counseling & Personnel Service)..	Specialization prepares for school and college counselors, rehabilitation counselors, school psychologists, and administration of personnel. 4 yrs. for doctorate, 1 yr. masters, and 2 yrs. for C. A. G. S.
C. A. G. S. (Counseling & Pers. Serv.).....	
D. Educ. (Counseling & Pers. Serv.).....	
Brandeis University, Graduate School of Arts & Sciences, Dept. of Psychology, Waltham, 02154	
Ph. D. Psychology.....	4 yrs. leading to Ph. D.; candidates for master's only (1 yr.) not admitted. Over 61 courses including experimental, developmental, physiological, clinical and social.
Clark University, 940 Main St., Worcester, Mass. 01610	
M. A. Psychology.....	Programs in experimental, developmental and child psychology, learning, clinical, social personality, and rehabilitation, Educational measurements, School counseling, Clinical psychology using Gardner State
Ph. D. Psychology (4 yrs. incl. 1 yr. internship) (Ph. D. clinical APA-appr.)...	
Postdoctoral psychology programs.....	

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Training Programs	
Clark University (contd.)	Hospital and other agencies. Developmental, rehabilitation, and other research at Heinz-Werner Institute of Developmental Psychology.
Annual workshops.....	In Comparative-animal psychology, Scaling theory, Factor analysis, Rehabilitation, Pathology of language, etc.
Harvard University, 75 Mt. Auburn St., Cambridge, Mass. 02138	
(Grad. Sch. Dept. Social Relations)	
A. M. Psychology.....	Clinical, social, child psychology
Ph. D. Psychology.....	Ph. D. in clinical, APA-approved.
(Grad. Sch. Dept. of Psychology)	
A. M. Psychology.....	Experimental, physiological psychology, cognitive studies. Includes course in motivation and action.
Ph. D. Psychology.....	
Postdoctoral programs.....	
(Graduate Sch. of Education)	Educational measurement and statistics; school counseling, admin. of guidance services, research in instruction, human development.
M. Educ.....	
Ph. D. Educ.....	
Lesley College, 29 Everett St., Cambridge, Mass. 02138	Includes: Seminar in clinical psychology, Survey of techniques of diagnostic and counseling nature. Students make a case study of an individual in a field station.
B. S. (Educ.) Psychology.....	
Massachusetts Institute of Technology 77 Massachusetts Ave., Cambridge, Mass. 02139	Physiological, general experimental, and social-developmental psychology. Only for Ph. D. candidates. Prerequisite: undergraduate work in physics, chemistry, biology and mathematics. 2 yrs. full-time, plus thesis, examination. Prepares for teaching and research.
Ph. D. Psychology.....	
Northeastern University. Graduate School of Arts & Sciences, Dept. of Psychology, 360 Huntington Ave., Boston, Mass. 02115	
M. A. Psychology.....	Experimental, physiological, social psychology.

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PSYCHOLOGIST, & COUNSELORS (contd.)

Training Programs	
Northeastern University. (contd.)	
Ph. D. Psychology.....	Personality.
Smith College, Northampton, Mass. 01060	
B. A. Psychology.....	Majors in: Personality and clinical psychology, Social psychology, Developmental and child psychology.
M. A. Psychology.....	Special studies include, developmental, social or clinical psychology.
Springfield College. Division of Graduate Studies, Springfield, Mass. 01109	
M. S. Rehabilitation Counseling.....	2 yrs.
M. Educ. (Psychology).....	1 yr. School counseling, guidance.
C. A. G. S. (Certificate of Advanced Graduate Study).....	Additional year after one-year masters. Includes school guidance, rehabilitation counseling, clinical.
Course at undergraduate level.....	Interviewing and counseling. For teachers, YMCA secretaries, recreational workers.
Tufts University, Medford, Mass. 02155	
(Graduate School of Arts & Sciences Department of Psychology)	
M. S. Psychology.....	1 yr. General and applied experimental psychology.
Ph. D. Psychology.....	General experimental psychology.
(Graduate School. Dept. Education)	
M. Educ. (Guidance).....	2 yr. Occupational guidance, human development.
M. Educ. (Child-care Counseling).....	2 yr. Child care counseling for emotionally disurbed children. In cooperation with the Judge Baker Guidance Center, Boston, where student takes a two-year paid apprenticeship.
(College of Liberal Arts & Jackson College for Women)	
B. S. Psychology.....	Includes courses in: Clinical psychology, Psychometrics, Experimental social psychology, Industrial psychology, Individual research projects.

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Training Programs	
University of Massachusetts. Graduate School, Amherst, Mass. 01002	
M. S. Psychology.....	2 yrs. 30-33 credits. General psychology.
Ph. D. Psychology.....	Clinical, counseling, educational, engineering,
Ph. D. in clinical APA-approved	experimental - child, personality, physiological, sensory, social.
Wellesley College, Wellesley, Mass. 02181	
M. S. Psychology.....	1 yr. Properly qualified graduate students are admitted to regular undergraduate advanced courses and to research problems or individual study. Experimental, child, or social psychology. Personality.
Western New England College, 1214 Wilbraham Rd. Springfield, Mass. 01119	
B. Bus. Admin.....	Program in Industrial psychology
M. Bus. Admin.....	Includes industrial and mental health as well as
B. Engineering (Industrial).....	counseling, motivation, testing, optimal working
Certificate and associate degree programs available in industrial psychology	conditions. Other prerequisite psychology courses. Program offered in both day and evening divisions.

REHABILITATION POSITIONS

Rehabilitation involves the care and assistance given persons with disabling conditions to help them learn to live within the capabilities of their limitations. Amputees learn how to use artificial limbs, stroke victims may regain movement lost by paralysis, or learn to use the movement they have. Polio and muscular dystrophy victims develop muscle control, persons with speech and hearing difficulties learn to talk and hear better, the blind develop techniques to substitute for their loss of vision. The acutely ill may be spared disability through rehabilitation treatment as prevention.

The goal of the treatment and counseling is the independence of the disabled in the home and as an employee. Children and adults who are emotionally disturbed, mentally retarded, or who have a variety of psychological learning difficulties benefit from rehabilitation.

There are many specialized positions in this field (listed below). Each specialist works with the other as part of a rehabilitation team with the doctor and nurse. The therapists, specialists, and teachers work in hospitals, nursing homes, clinics, rehabilitation centers, treatment centers, sheltered workshops, public and private schools for both normal and crippled children, in the home, in community agencies (local, state, federal), in physician offices, in the military services, Veteran's Administration and Public Health Service, and on college and university faculties.

(OCCUPATIONAL THERAPIST)

Individuals are referred by physicians to the occupational therapist for evaluation and treatment. The treatment takes many forms of purposeful activities: creative (writing, dramatics, music, art, design), manual (ceramics, leathercraft, weaving, textile crafts and printing, blueprint reading, hand and power tools), recreational, daily living activities, pre-vocational or functional (exercises). The therapist often calls upon outside experts to conduct specialized skill training.

Often he will have the assistance of volunteers who will work under his supervision. He may be responsible for their training.

The treatment is determined according to the individual need of each patient. Activities are used to encourage the return of physical or mental function and thereby decrease the disability. The therapist helps the patient to use whatever function he still has to achieve the greatest degree of independence possible. The patient may be physically disabled, emotionally ill, socially and developmentally deprived, or mentally retarded. Treatment is given during both the first acute phase and the later chronic phase of the illness.

A clinical internship period of six to nine months is a required part of the 4-year baccalaureate program in order to qualify for professional registration by the American Occupational Therapy Association.

Training Programs	
Boston University, Sargent College of Allied Health Professions, Charles River Campus, Boston, Mass. 02215 B. S. Occupational Therapy..... (In cooperation with B. U. School of Medicine).	4 yrs, including 6-9 months full-time clinical experience (3 months during the summer following the third year; the remainder after graduation). The program accepts transfers in the second and third

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(OCCUPATIONAL THERAPIST) (contd.)

Training Programs	
Boston University. Sargent College (contd.)	
B. S. Occupational Therapy (contd.).....	year. Half the courses are liberal arts, the other half professional preparation. At the end of the clinical affiliation, the student receives a certificate and is eligible for the national registration examination to become a registered occupational therapist.
Certificate in Occupational Therapy.....	Special postgraduate program for persons with a baccalaureate degree. 2-3 yrs. (45 credits) in sixteen subjects. Includes nine-month clinical training, and prepares for the national registration examination. Limited number of students.
M. S. Occupational Therapy.....	
Tufts University. Boston School of Occupational Therapy, 136 Harrison Ave., Boston, Mass. 02111	
B. S. Occupational Therapy.....	4 yrs., including nine months hospital internship.

(ORTHOPTIST)

The orthoptist usually works under the supervision of the ophthalmologist, helping youngsters and adults overcome the handicap of crossed eyes and other eyes derects. She teaches the patient certain exercises which help the eyes work together as they should, and applies other techniques as directed. The training for this specialty can be a degree course or a fifteen-month training at a hospital after two years of college (See Part I). Both courses qualify for certification of the American Orthoptics Council.

Training Programs	
Simmons College, 300 The Fenway, Boston, Mass. 02115	
B. S. (Orthoptics)..... (In cooperation with the Massachusetts Eye & Ear Infirmary).	The concentration is taken in the fourth year in cooperation with the affiliating hospital. Academic requirements are met at the end of the fourth academic year, but an additional six month internship is necessary to qualify for the certification of the American Orthoptics Council.

REHABILITATION POSITIONS (contd.)

(PHYSICAL THERAPIST)

The demand for physical therapists has been rapidly increasing as the profession broadens. Once polio patients called on most of the services of the physical therapist. Now, children and adults with all kinds of motor disabilities and breathing problems, from specialties such as neurology, cardiac surgery, medical, as well as orthopedics, arthritis, rely heavily on the therapist. This has resulted in heavy case loads for the therapist in hospitals, nursing homes, home health agencies, and other treatment centers, and there is a need for physical therapy assistants and aides as well. (See Part I).

On medical referral, the therapist works directly with the patient and his family and this relationship often determines the patient's attitude toward doing his part of the treatment. The therapist engages in patient evaluation, the follow-up care, and instruction. The treatment may include therapeutic exercise to enable the person to walk again or use other parts of the body, massage, use of heat and cold in water baths, hot packs, electricity to stimulate paralyzed muscles, or teaching the patient to use braces or other needed appliances.

In 1967 three-quarters of physical therapy graduates found positions in general hospitals and specialized hospitals, the others in health agencies, outpatient centers, extended care facilities and others. Some therapists enter private practice on a medical referral basis, while others are hired by public schools as well as special schools for the handicapped.

Supervised clinical experience is included in the four-year baccalaureate program. Graduate courses at the master's and doctorate levels enable the physical therapist to go into research, teaching or administration.

Training Programs	
Boston University. Sargent College of Allied Health Professions., Boston, Mass. 02215	
B. S. Physical Therapy..... (In cooperation with the Boston University School of Medicine)	4 yrs. incl. fifteen weeks of full-time clinical experience after graduation. Professional courses are concentrated in the last two years so that transfer students can be accepted.
M. S. Physical Therapy.....	
Northeastern University. Boston-Bouve College, 360 Huntington Ave., Boston, Mass. 02212	
B. S. Physical Therapy.....	4 yr. modified cooperative plan. First year, three consecutive twelve week quarters, followed by a cooperative plan in the sophomore year (two quarters in school, two quarters at work each academic year). Admission requires high school courses in biology, chemistry & physics.
M. S. Physical Therapy.....	

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(PHYSICAL THERAPIST contd.)

Training Programs	
Simmons College, 300 The Fenway, Boston Boston, Mass. 02115 B. S. and diploma, Physical Therapy.....	4½ yrs. During the last 1½ year much of the basic instruction is at the Children's Hospital Medical Center, but the balance of the clinical experience is apportioned during earlier years at the affil - ated hospitals, Massachusetts General, and Peter Bent Brigham.
B. S. Physical Therapy.....	1½ yr. program for college graduates who have taken Biology (8 hrs.), Physics (8), Chemistry (8), Anatomy (4), Physiology (4), Soc. Sci. (12), and at least 6 hrs. in Psychology.

(RECREATION THERAPIST)

Recreational therapy is part of the restorative services for people who are ill, disabled, or handicapped. The recreational therapist is trained to select certain recreational activities that will help in the recovery of the patient's illness or disability. The therapist may work in the hospital, other medical or extended care facilities, or work in community situations where the persons who have returned home can continue to keep up the needed activity.

In the institutions, he supervises the volunteers who help with recreation, or he may arrange for outside groups to sponsor various kinds of recreation. Some of the activities he will direct are: athletic games, dancing, music, dramatics, card games, movies, gardening, handicrafts, and special events such as picnics, trips to ball games, museums and zoos.[3]

Most of the recreation therapists are engaged in mental hospitals or general and psychiatric hospitals operated by the Veterans Administration, in special facilities for mentally ill or retarded children. Others work in homes for the aged, for the Red Cross in Armed Forces hospitals, in general hospitals, rehabilitation centers, chronic disease hospitals, special schools and community centers, after-care and home-bound programs, municipal recreation departments, public and private welfare agencies at the local, state and national levels.

Training Programs	
Boston University. Sargent College of Allied Health professions, Charles River Campus, Boston, Mass. 02215 B. S. Therapeutic Recreation.....	4 yrs. Includes courses in music, art, camping, photography, newswriting, reporting and writing, as well as psychology of the handicapped and therapeutic recreation.

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REHABILITATION POSITIONS (contd.)

(RECREATION THERAPIST) (contd.)

Training Programs	
Boston University (contd.) (Graduate School of Education) M. Education (Recreation)..... D. Education (Recreation)..... C. A. G. S. (Recreation)..... M. Educ.(For Mentally Retarded).....	Program of study is constructed from graduate courses in the College of Business Administration, School of Social Work, School of Public Communcation & Graduate School, as well as School of Education.
Northeastern University, Boston-Bouve School, 360 Huntington Ave., Boston, Mass. 02112 B. S. Educ. (Recreation Education).....	4 yr. modified cooperative plan. First year of three consecutive twelve week quarters, followed by a cooperative plan in the sophomore year (two quarters in school, two quarters at work for each academic year).
Springfield College, Springfield, Mass. 01109 B. S. Recreation as Therapy.....	4 yrs. Specialized studies start in the first year and continue all four years. They include recreation skills, music, crafts, camp leadership, festivals as well as first aid, safety, hygiene, problems of disability in the adapted physical education program. Selected students may serve on the Springfield College Day Camp staff or work during the summer months (a Sears Roebuck Foundation camping intern program).
University of Massachusetts, School of Physical Education, Amherst, Mass. 01002 B. S. Recreation.....	Includes an option to prepare for a career in hospitals and institutions dealing with the ill, handicapped, and other types of dependents. There is a 18 credit specialization in recreation.

(REHABILITATION NURSING)

Training Programs	
Boston College, Graduate School of Arts & Sciences, Dept. of Nursing, Chestnut Hill, Mass. 02177 M. S. Nursing (Rehabilitation Nursing)...	2 yrs. 44 credits.

(REHABILITATION SPECIALIZATION & RESEARCH)

The programs listed below cover more than one aspect of rehabilitation training. Since they could not be listed under the specific occupations in this section, they are grouped together here.

Training Programs	
Boston College, Graduate School of Arts & Sciences, Department of Education, Chestnut Hill, Mass. 02177 M. S. Educ. (Special Education and Rehabilitation..... Ph. D. Education (Spec. Education & Rehabilitation).	Extensive courses for working with the blind, deaf, emotionally disturbed, handicapped, speech disorders.
Clark University, Worcester, Mass. 01610 Ph. D. (Rehabilitation).....	In conjunction with other areas of specialization, rehabilitation research training is available. Such training usually begins after the first two years of graduate work. Program is designed to prepare students for investigation of psychological problems as they occur in everyday life. Emphasis is on the development of novel techniques and concepts. There is an appreticeship-practicum during which the various phases of research in real-life settings are examined. Particularly pertinent to those who are interested in social-emotional and value problems of handicapped and non-handicapped people.
Northeastern University. Graduate School of Education, 360 Huntington Ave.Boston,Mass.02115 M. Educ. (Medical Rehabilitation)..... M. Educ. (Administration Rehabilitation).. M. Educ. (Vocational Rehabilitation)..... listed also on page 62 & 67	

REHABILITATION POSITIONS (contd.)

(SPEECH THERAPISTS, AUDIOLOGISTS, & ASSISTANTS)

The field of speech pathology and audiology (disorders in speech, language, hearing and their rehabilitation) is a relatively new field. Forty years ago there was no central agency or clinic for persons requiring speech and/or hearing rehabilitation. Few physicians, or child psychologists had been trained in therapeutic techniques for speech and hearing disorders. Today, there are specialists who concentrate on speech and hearing problems, working in the elementary and secondary schools, in college, hospital, and special Armed Forces clinics, in nursing homes, in special schools for the deaf, for crippled children, and as consultants in hospitals, social agencies, and medical centers.

Speech and hearing disorders can be classified as; defect of articulation, voice production, rhythm, delayed speech development, cleft palate speech, cerebral palsy speech, impairment of language function (aphasia) and speech defects associated with defective hearing. Frequently, a person has multiple defects. For example, a hard-of-hearing child or a cerebral-palsied child may have defects of language delay, articulation and voice. Most cleft-palate children have defects of articulation as well as voice. Brain-damaged adults frequently suffer impairment of language function as well as articulation.

The therapist's job is to determine the severity of the disorder, to identify the problem through interviews and tests in order to help decide which of the variety of techniques, exercises and scientific devices should be used in the rehabilitation. The therapist makes referrals for medical or other professional attention.

Since the speech or hearing disability may often have an organic origin, the therapist works closely with the physician and dentist, and where the cause may be emotional, he will work with the psychiatrist or psychologist, or he may work with the public health nurse, the social worker, and the school teacher.[1,2]

The professional speech pathologist and audiologist need master's degrees. However, many jobs are available as assistants for those who have taken special courses at the undergraduate level. As the field is still fairly new, many persons practising today have only a bachelor's degree, but the equivalence of the master's degree is required for obtaining membership in the American Speech and Hearing Association, and a certificate of clinical competence is awarded by the ASHA (one for speech pathology and another one for audiology) for those with their master's plus a year of experience in the field. The master's degree is also necessary for research and teaching positions.

Training Programs	
Atlantic Union College, South Lancaster, Mass.	
Course in Speech Correction.....	2 hrs. wk. Study of causes, nature and treatment of common speech defects. Planned especially for the classroom teacher.

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(SPEECH THERAPIST, AUDIOLOGIST, & ASSISTANT) (contd.)

Training Programs	
Boston College. College of Education and College of Business Administration, Chestnut Hill, Mass. 02177 Two courses leading to B. A. in Speech and English.....	Voice Science - 3 credits. The study of mechanisms for speech and hearing, international phonetic systems, and experience in phonetic transcription. Introduction to Speech Correction - 3 credits. The more common speech handicaps and their causes. A course designed to meet the needs of youth workers, teachers and others working with young people.
Boston Conservatory of Music, 8 The Fenway, Boston, Mass.02115 Courses in Voice Therapy.....	2 hrs. weekly for two semesters. Anatomy and physiology of the larynx and respiratory organs and musculature, study of various pathologies involved in throat problems; exercises for handling these problems. Course continues for a third semester, two hours/week as a clinical internship in a local medical institution, plus a symposium.
Boston University, 725 Commonwealth Ave., Boston, Mass. 02215 (School of Education) B. S. Educ. (Speech and Hearing).....	4 yrs. Includes courses in General psychology. Psychology of personal adjustment, Fundamentals of speech. Psychology of learning. Orientation to speech and hearing, Introduction to speech therapy, Speech pathology and audiology, Science of speech, Clinical techniques of speech, Aural rehabilitation, Education and psychology of the exceptional child.
(Graduate School of Education. Dept. of Special Education) M. Educ. (Speech Pathol. & Audiology).... C. A. G. S. (Speech Pathol. & Audiology). D. Educ. (Speech Pathol. & Audiology).... In cooperation with B. U. Medical Center, Veteran's Administration, Jos. P. Kennedy Memorial Hospital	Prepares for positions as speech pathologists and audiologists, to conduct diagnosis and therapy for the speech, language and hearing handicapped in public schools, hospitals, clinics, rehabilitation centers, or teaching. Depending on background, usually a one-year program for a master's degree.

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REHABILITATION POSITIONS (contd.)

(SPEECH THERAPISTS, AUDIOLOGISTS & ASSISTANTS) (contd.)

College of Our Lady of the Elms, Chicopee, Mass. 01073	
Survey Course in Speech in Education.....	2 credits. Includes development of speech and language, consideration of types and causes of speech disorders and therapeutic procedures.
Eastern Nazarene College, Wollaston Park, Quincy, Mass. 02170	
Course in Speech Correction.....	Includes study of disorders of speech and treatment, ability to detect and diagnose, recommend, and employ corrective procedures.
Emerson College, 130 Beacon St., Boston Boston, Mass. 02116	
B. S. Speech Pathology & Audiology.....	Background for graduate level study. Thirty specialized courses taken over four year period on: speech and hearing disorders, therapeutic techniques, diagnostic procedures, defects of cerebral palsy, aphasia, problems of cleft palate, vocal cords, dental anomalies, laryngectomy, stuttering, hearing-aid selection and evaluation. In the third year, the student starts his clinical experience. Students also observe at the college's Robbins Speech and Hearing Center where pediatricians and psychologists examine and give therapy to children with speech and hearing defects. Within the center is the Thayer Lindsley Nursery designed to educate pre-school deaf children.
M. S. Speech Pathology.....	
Lesley College, 29 Everett St., Cambridge, Mass. 02138	
Two courses.....	(1) Teaching the Language Arts in Elementary School - includes diagnosis and treatment of minor speech difficulties. (2) Speech Development and Correction, includes a survey of speech disorders and remedial procedures (related to the education of exceptional children).

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REHABILITATION POSITIONS (contd.)

(SPEECH THERAPISTS, AUDIOLOGISTS & ASSISTANTS) (contd.)

Training Programs	
Northeastern University. College of Education and Graduate School of Education, 360 Huntington Ave., Boston, Mass. 02115 B. S. In Educ. (Speech & Hearing Therapy).....	5 yr. cooperative plan. Courses include: Introduction to speech and hearing therapy, Anatomy, physiology and neurology of speech and hearing mechanisms, Organic speech disorders, Methods and materials in speech and hearing, Introduction to audiology, Diagnostic techniques in speech and hearing, Clinical practice in speech and hearing at the University Clinic, Functional speech disorders, Speech reading and auditory training, Introduction to stuttering.
M. S. Educ. (Speech Pathology & Audiology)..... In affiliation with the Massachusetts Eye and Ear Infirmary	Prepares for certification as speech pathologist or audiologist by the Amer. Speech & Hearing Assn., or for further graduate study. 48 quarter hrs. Prerequisite for admission: teacher certification.
Smith College, Northamption, Mass. 01060 M. S. Educ. of the Deaf.....	1 academic year and one summer. In cooperation with the Clarke School of the Deaf in Northampton.
State College at Fitchburg, Fitchburg, Mass. 01420 Course: Introduction to Speech Disorders	Diagnostic and therapeutic techniques with more common types of speech disorders. For prospective classroom teacher.
State College at Westfield, Westfield, Mass. 01085 Course in Speech Therapy.....	To give the classroom teacher the basic knowledge of speech defects and treatment of such defects. Observation of treatment.
Tufts University. College of Arts & Sciences, Dept. of Speech, Medford, Mass. 02155 Course in Speech & Hearing Problems..... (Undergraduate & graduate credit)	3 credits. Language development and language disorders in children. Given in both the winter evening and the summer schools.

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REHABILITATION POSITIONS (contd.)

(SPEECH THERAPISTS, AUDIOLOGISTS & ASSISTANTS) (contd.)

Training Programs	
University of Massachusetts, Amherst, Mass. 01102	
(Graduate School of Arts & Sciences)	
M. A. Speech Pathology & Audiology.....	Fulfills the requirements for certification by the American Speech and Hearing Assn., and Mass. Dept. of Educ. Includes courses in voice problems, Clinical practicum, Experimental phonetics.
(College of Arts & Sciences)	
B. S. (Speech Pathology & Audiology).....	Eight specialized courses with laboratory and clinical practice.

(TEACHERS OF THE EMOTIONALLY DISTURBED AND MENTALLY RETARDED)

While the teacher of emotionally disturbed and mentally retarded persons is not a therapist (she does not "treat" the child or adult, or attempt to effect a personality change), her work in educating him has a profound effect on his health and his ability to achieve a satisfying pattern of living. The teaching of children up to age seventeen includes the same skills and educational subjects of the normal classroom, but taught in an entirely different manner, and only as much as each child can absorb. Adults are taught occupational skills.

Since the two type of mental disorders are quite different, they are usually taught separately, but sometimes taught together in special education classes in the early years in public school.

Mental retardation is caused by abnormalities of development starting before birth, or by accidents occurring during and after birth. The mental retardation appears soon after birth or when the child is very young, slowing his responses.

The handicaps of the emotionally disturbed, on the other hand, manifest themselves in childhood, adolescence, or adulthood. These persons may be hyperactive and impulsive, overacting to situations, noises, objects, and other stimuli, both internal and external. The emotionally disturbed children are not able to interact or work together successfully as a normal group of children could. Nor do they respond to the usual signals that a teacher uses to control behavior - a look or a gesture. For this reason, separate classes are set up for them in the schools, or they may attend special schools. Frequently the emotionally disturbed have physical as well as psychological handicaps. Hearing losses, visual problems, organic brain disease or speech disorders may cause or contribute to the emotional-social handicaps, psychoses, or neuroses.

These children must be taught how to experience there own relation to space, new approaches to perception, form, movement and rhythm, all the things that normal children naturally learned in their everyday experiences.

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(TEACHERS OF THE EMOTIONALLY DISTURBED AND MENTALLY RETARDED) (contd.)

The teacher sets up these experiences for the disturbed or retarded child so that he can learn the things the normal child takes for granted. The teacher observes each child's learning style and his particular way or responding so that she can know when to give him a feeling of structure (finding his place in line, his place at table, a sensing of the group order). Her approach and instructions must be carefully consistent, to ensure that the child develops as a person capable of achieving his learning goals.

While the teacher works with small class groups, she has to be constantly aware of a continuing relationship between herself and each child to keep him from detaching himself from the learning. She has to adjust differing methods of control to his constantly changing moods. Such flexibility requires an extremely stable person, with a healthy attitude and a good sense of humor.

Teachers in this field find positions in the public schools, in special schools (both public and private) which take adults as well as children, and in mental institutions.

One may teach emotionally disturbed or mentally retarded persons with the background of a bachelor's degree and some concentration in special education. A master's degree is more desirable. The Certificate of Advanced Study (earned after a year of study beyond the master's degree) is a requirement for counseling or administrative positions in this field.

Training Programs (TEACHERS & COUNSELORS OF THE EMOTIONALLY DISTURBED)	
Assumption College, 500 Salisbury St., Worcester, Mass. 01600	
C. A. S. (Certif. of Advanced Study).....	Certificate in Teaching-counseling the emotionally disturbed. Course at the Institute on Problems of teaching the perceptually handicapped.
Seminar in Mental Health.....	
Boston College, Graduate School of Arts & Sciences, Chestnut Hill, Mass. 02167	
M. S. Educ. (Special Educ. & Rehab.).....	Program prepares for teaching the emotionally disturbed child.
Post-master's degree program.....	Prepares for planning and conducting research on the handicapped, supervising special class teachers, teaching college level courses, curriculum construction, guidance.
Boston University, Charles River Campus, Boston, Mass. 02115	
(School of Education)	
B. S. Educ. (Special Education).....	4 yrs. Major in teaching the emotionally disturbed. Five courses dealing especially with the emotionally disturbed as well as electives in educational psychology and required educational courses.
(Graduate School of Education)	
M. Educ. (Special Education).....	Concentration in the area of dealing with the emotionally disturbed and socially maladjusted. Also program for "Special Hearing Disability".
Ph. D. Educ. (Special Education).....	

REHABILITATION POSITIONS (contd.)

Training Programs	
(TEACHERS OF THE EMOTIONALLY DISTURBED) (contd.)	
Lesley College, 29 Everett St., Cambridge, Mass. 02138	
B. S. Educ.....	4 yrs. Minor concentration in teaching the emotionally disturbed. Seven specialized courses in addition to electives in psychology and guidance. The college operates the Walter F. Dearborn School, a remedial school in which the majority of the pupils are emotionally disturbed. The school has clinical personnel who provide therapy.
(Graduate School & Extension Div.)	
M. Educ. (for those with Liberal Arts degree).....	1 yr. and a summer. Includes course in "Sensitivity Training".
M. S. Educ. (given to experienced teachers with a B. S. in Education).....	
Northeastern University, Graduate School of Education, 360 Huntington Ave., Boston, 02115	
M. Educ. (Teaching the Emotionally Disturbed).....	40-quarter hours. Courses include: Etiology, Dynamics and treatment, Problems & strategies in teaching, Group dynamics, Mental health, Socio-and psycho-dynamics of family life.
Tufts University. Eliot-Pearson Department of Child Study, Medford, Mass. 02155	
Undergraduate course.....	Course on: Exceptional child, 3 credits in program leading to a B. S. Child Study.
Graduate course.....	Course on: Special methods with emotionally disturbed children - teaching procedures, research reports, clinical visits and classroom demonstrations. 3 credits.
Wheelock College, 200 Riverway, Boston, 02215	
M. S. Educ.....	Specialization in Teaching of Emotionally Disturbed Children. 12 month sequence: academic year plus summer. Prefer applicants with teaching experience.
TEACHERS OF THE MENTALLY RETARDED	
Assumption College, 500 Salisbury St., Worcester, Mass. 01600	
C. A. S. (Certif. of Advanced Study).....	Certificate in teaching-counseling the mentally retarded. For school administrators, teachers, etc. Courses at Institute on Problems of Teaching the Perceptually Handicapped.

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REHABILITATION POSITIONS (contd.)

Training Programs (TEACHERS OF THE MENTALLY RETARDED) (contd.)	
Boston College, Chestnut Hill, Mass. 02167	
(College of Arts & Sciences)	
B. S. Educ.....	4 yrs. Concentration in teaching the mentally retarded. Leads to special certification.
(Graduate School of Arts & Sciences Dept. of Education)	
M. S. Educ. (Special Educ. & Rehab.).....	Programs prepare for teaching the mentally retarded.
Ph. D. Educ. (Special Educ. & Rehab.)....	
Boston University, Charles River Campus, Boston, Mass. 02215	
(School of Education)	
B. S. Educ. (Special Education).....	4 yrs. Ten special courses in mental retardation as well as electives in educational psychology.
(Graduate School of Education)	
M. S. Educ. (Special Education).....	Specialization in the mentally retarded. Traineeships and fellowships from U. S. Office of Education available. Also research assistantships.
Ph. D. Educ. (Special Education).....	
Lesley College, 29 Everett St., Cambridge,02138	
B. S. Educ.....	(Teaching the Mentally Retarded). Nine specialized courses in addition to electives in psychology and guidance. Lesley College operates the Carroll Hall School which provides educational opportunities for educable mentally handicapped children.
(Graduate School & Extension Div.)	
M. Educ. (for Liberal Arts College graduates).....	1 yr. and a summer. 38 credits. Includes courses in "Sensitivity Training" and 6 credit course for Special Class Certification required by State Board of Educ. Choice in: sewing, arts & crafts, woodworking.
M. S. Educ. (for graduates of teacher training institutions).....	
Summer school graduate and undergraduate courses.....	Workshop in arts & crafts for special classes (mentally retarded): 2 weeks. Psychology of the subnormal and unadjusted child: 6 weeks.

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REHABILITATION POSITIONS (contd.)

Training Programs	
(TEACHERS OF THE MENTALLY RETARDED) (contd.)	
Springfield College, Dept. of Physical Education, Springfield, Mass. 01109 Courses.....	Two courses: Physical education for the mentally retarded and associated disorders; Adapted sports in recreation.
State College at Boston, 625 Huntington Ave., Boston, Mass. 02115 Course in Physical Education and Recreation for the Mentally Retarded.....	3 semester hrs. per week. Part of B. S. or B. A. Educ. (Physical Education)
Tufts University. College of Liberal Arts and Sciences & Jackson College, Medford, 02155 Course.....	Course on: Exceptional child. Elective in the program leading to a B. S. Educ. (Child Study).
University of Massachusetts. College of Arts & Sciences, Amherst, Mass. 01002 Course.....	3 credits. Introduction to the study of the exceptional child.

(TEACHERS OF THE PHYSICALLY HANDICAPPED, INCLUDING THE BLIND & DEAF)

Children and adults handicapped by partial or total blindness, deafness, crippling conditions, or multiple handicaps, need special teachers to help them learn to read, speak and coordinate movement, in addition to mastering the regular school subjects.

In community agencies and public and private schools, blind and partially blind (low blind) students are taught orientation and mobility (peripatology), braille (mathematical and literal), and independent travel techniques.

Teachers of the deaf and hard of hearing use speech-reading methods and special auditory training to enable their students to understand and use oral communication.

The deaf-blind are taught language using analytic and synthetic methods (including the vibration method) which brings about the formation, development and correction of elementary speech sounds.

Those with crippling conditions are taught in hospitals, in special classes, in the home, and in residential institutions. Their learning situation is complicated by problems of health, adjustment, and acceptance of their handicaps in terms of body image, self-concept and status position. This is given special consideration by the teacher.

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REHABILITATION POSITIONS (contd.)

(TEACHERS OF THE PHYSICALLY HANDICAPPED, INCLUDING THE BLIND & DEAF) (contd.)

Teachers in this field of special education may, at times, counsel parents of crippled, deaf, blind, or deaf-blind children so that they may better understand their child's particular handicap and their own role in helping him have a successful learning experience.

A master's degree is required for those interested in teaching the physically handicapped. The doctorate is necessary if a person is interested in teaching special education, in planning guidance programs for the handicapped, and for doing research.

Training Programs	
Boston College, Chestnut Hill, Mass. 02167 (Grad. Schl. of Arts & Sciences, Dept. of Education) M. S. Educ. (Special Education & Rehabilitation)..... Peripatology program in cooperation with the U. S. Vocational Rehabilitation Administration. Teaching the blind and deaf in cooperation with Perkins Institute for the Blind.	Programs to prepare students to teach (a) orientation and mobility (peripatology) to blind children and adults in community agencies and public and private schools; (b) children who are blind or partially sighted; (c) children with multiple handicaps, including those who are deaf-blind. There is some degree specialization with a different course concentration listed under teaching the emotionally disturbed and mentally retarded.
Post-master's degree program..... For experienced special educators	Planning and conducting research, preparation for supervising special class teachers, college level teaching, curriculum construction for special classes, guidance services.
Boston University, 765 Commonwealth Ave., Boston, Mass. 02214 (Grad. Schl. of Educ. Dept. of Special Education) M. Educ. (Deaf)..... In cooperation with the Boston School for the Deaf. M. Educ. (Aphasic Children) In cooperation with the Boston School for the Deaf.	Both programs below are designed for teachers, supervisors, administrators, therapists, and research wkrs. Teaching of the deaf. Two semesters and one 6-wk. summer session for degree, and certification by the Confer. of Executives of American Schls. for the Deaf. Prepares clinical teachers for classes of children with language learning disabilities. With appropriate background, student may complete in 1 yr. plus a summer. Otherwise, a 2 yr. program.

REHABILITATION POSITIONS (contd.)

Training Programs	
(TEACHERS OF THE PHYSICALLY HANDICAPPED, INCLUDING THE BLIND & DEAF) (contd.)	
Smith College. Dept. of Education & Child Study., Northampton, Mass. 01060	
M. Educ. of the Deaf..... In cooperation with Clarke School of the Deaf, in Northampton.	1 academic year and one summer. 38 semester hours, 30 at Clarke, 8 at Smith.
Springfield College, Dept. of Physical Educ., Springfield, Mass. 01109	
Courses.....	Include: Techniques of teaching ambulation and self-care activities for the handicapped; Anatomy applied to rehabilitation; Body mechanics and kinesiology applied to rehabilitation (arthritis, muscular problems and other motor functions); Physical education for the atypical child.
Tufts University. Graduate School of Arts & Sciences, Medford, Mass. 02155	
M. Educ. (Teaching Physically Handicapped Children).....	One academic year, including clinical training and supervised training at Massachusetts Hospital School, Canton, Mass.
University of Massachusetts. Department of Education, Amherst, Mass. 01002	
M. Educ. of the Deaf..... In cooperation with the Clarke School of the Deaf in Northampton.	1 academic year and one summer. 36 hours.

(VOCATIONAL REHABILITATION COUNSELORS, & ADMINISTRATORS)

Vocational rehabilitation counselors find jobs and counsel those who are physically, emotionally, or mentally handicapped. These handicaps could include: blindness, deafness, a crippling condition, amputation, mental retardation, emotional disturbances, juvenile delinquency, aging, and financial problems. The counselor may be responsible for locating persons in need of rehabilitation. He becomes acquainted with the client's problems, arranges for diagnosis and tests, evaluates his

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(VOCATIONAL REHABILITATION COUNSELORS & ADMINISTRATORS)

situation and capabilities, arranges for rehabilitation services needed (physical restoration, prevocation, and vocation), and helps him secure employment.

A vocational rehabilitation counselor must know how to meet his client's emotional and financial needs while satisfying the demands of a particular job. A person who is physically or mentally disabled may be unaware of his capabilities or may feel he lacks ability. The counselor is trained to understand these additional problems and discover what the client is capable of doing. He is familiar with various job placement services, will find a job that requires some of the client's skills, a job with duties he is able to perform, and will make follow-up visits to help the adjustment. In this way, the handicapped person will be meeting the needs of his employer while feeling confident that he has an important contribution to make.

Vocational rehabilitation counselors and those who administer the program, work in federal, state, and private agencies, sheltered workshops, rehabilitation centers, community action programs, or hospital rehabilitation programs. They must have special training in this field, which means additional study at the master's degree level. A Ph. D. is often necessary, especially if the person is interested in advanced vocational rehabilitation administration.

Training Programs	
Boston University. Graduate School of Education, Dept. of Counselor Education, 725 Commonwealth Ave., Boston, Mass. 02215 M. Educ. (Rehabilitation Counseling)..... C. A. G. S. (Rehabilitation Counseling).. Ph. D. (Rehabilitation Counseling).....	10 Courses covering the rehabilitation of the emotionally disturbed and mentally retarded, as well as the medical, physical, and psychological aspects of rehabilitation. Clinical practice in the field 2 days a week, two terms, for agency policy, function, client contact; 3 days a week, four terms, in practice counseling.
Northeastern University. Graduate School of Education, 360 Huntington Ave., Boston, 02115 M. Educ. (Vocational Rehabilitation Administration)..... 1 yr. for students with considerable rehabilitation or administrative experience. 2 yrs. for those with limited experience.	Includes courses in Medical rehabilitation and social services, Organization and administrative theory, Supervision, Rehabilitation setting administration, Federal-State relations, Statistics, practicum in research, and Administration. Electives in: Community planning, Sheltered workshop, law, Occupational placement, Accounting, Social welfare and rehabilitation, Group dynamics. Winter and summer courses.

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REHABILITATION POSITIONS (contd.)

Training Programs	
(VOCATIONAL REHABILITATION COUNSELORS & ADMINISTRATORS) (contd.)	
Springfield College, Springfield, Mass. 01109 M. S.(Rehabilitation Counseling)..... In cooperation with U. S. Office of Vocational Rehabilitation.	2 yrs., 35 credits for M. S. For certificate 6 terms. Includes courses in: Psychology of exceptional youth and adults; Occupational and educational information and adjustment, Medical survey; Legislation and administration, Counseling including practicum and internship; Advanced community organization.

SOCIAL WORKER

When illness results in serious and prolonged incapacity, it puts strain on other family members, on financial resources and produces emotional stress. In turn, it has an effect on the recovery of the ill person. This is where the social worker enters the health picture.

While many families can adjust to cases of illness, too often the problem is more than they can manage. They need professional help. The social worker, working with the physician, or other members of the health center team, works closely with the family to help overcome the difficulties in adjusting to the illness. Thus, much of the social worker's time may be spent outside the institution, helping the patient and his family in the community.

In the medical setting, the social worker helps the patient plan for his convalescence and return to the community. She, or he, may get in touch with an employment counselor, with a school teacher, a child placement agency and other community resources.

Medical social workers are employed in hospitals, clinics, in local, state and federal public health or welfare departments, public and private health centers, in military and veterans hospitals, in voluntary agencies concerned with crippled children, the blind, the handicapped people in need of rehabilitation, the deaf, patients with tuberculosis, heart disease, or cancer. Experienced social workers may teach in schools of medicine, public health and social work, or engage in research.

In the psychiatric situation, the social worker assists those who may be physically healthy but are mentally or emotionally disturbed. Along with the psychiatrist, the psychiatric nurse and the psychologist, he works in and out of the mental hospital or mental health clinic. In conjunction with the psychiatrist, he obtains from the patient his personal history, including symptoms and steps leading to his present breakdown or disturbance. He explains to the family the nature of the patient's illness, shows them how to cooperate best to help him get well. He will also assist the patient in overcoming fears and prejudices that may retard his recovery.

Psychiatric social workers may work in child guidance clinics, be part of a hospital psychiatric service, work in federal hospitals and specialized institutions for epileptics and the mentally retarded. They provide psychiatric care in court, community centers, and rehabilitation organizations.

Fourteen percent of the social workers in the United States in 1965 were estimated to be in the health field, somewhat more in psychiatric than in medical positions.[2]

A master's degree (2 yrs.) from an approved school of social work is a requirement for professional social work. Many caseworkers with baccalaureate degrees in social work or sociology, however, are employed to work as case aides to the professionals. There are also aides who assist who may be neighborhood persons with less than baccalaureate degree training. (See Part I).

Training Programs	
Boston College, Graduate School of Social Work, Chestnut Hill, Mass. 02177 M. S. in Social Work.....	2 yrs. First year, students are engaged in field instruction in a social agency two days a week and

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SOCIAL WORKERS (contd.)

Training Programs	
Boston College. (contd.)	attend classes three days a week. Second year students spend three days a week in the field. Field work includes work in agencies for child welfare, correction, family service, mental health, hospitals, school social work, and community organization agencies. A part-time study program spreads the requirements of the first year over three years, and the second year class and field work are taken on a full time basis.
Boston University. School of Social Work. Charles River Campus, Boston, Mass. 02215 M. Social Work.....	2 yrs. It is also possible to take part-time study for the master's degree over a three year period.
Brandeis University. Florence Heller Graduate School for Advanced Studies in Social Welfare, Waltham, Mass. 02154 M. A. Social Welfare (2 yrs.)..... Ph. D. Social Work (3 yrs. incl. M.A.)..	Primarily a doctoral program for students interested in teaching, research, administrative and consultative roles. The master's degree is received during the course of study. Emphasis is placed upon community organization, social work administration and research. Graduates accept positions in established areas of social work as well as newly emergent areas such as international social work, inter-group organization, labor industry, and government.
College of our Lady of the Elms, Chicopee, Mass. 01013 B. S.Sociology.....	Includes two undergraduate courses in social work: an introductory course including casework methods complemented by a quasi-field work placement; and a course in child welfare problems also including quasi-field work placement. Prepares for casework assistants and for further graduate study.
Eastern Nazarene College, Wollaston Park, Quincy, Mass. 02170 B. S. Social Work.....	A six-course concentration including, in the senior year, field work and placement twelve hours per week under the direct supervision of trained social workers.

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SOCIAL WORKERS (contd.)

Training Programs	
Emanuel College, 400 The Fenway, Boston, 02115	
B. S. Sociology.....	4 yrs. In the senior year, the course includes field work for a few students preparing for social work. Courses include: Fields of social work - the art of interviewing, study of casework, of group, medical, psychiatric and community organizations; Seminar in sociology of the community. No credit for the field work.
Northeastern University, Lincoln-University College, 360 Huntington Ave., Boston, 02115	
B. S. (Sociology-Social Work).....	Includes field work practicum. Part-time program with 174 credits in the major concentration.
Regis College, Weston, Mass.	
B. A. Sociology.....	4 yrs. Includes field work experience one day each week in social agencies in the Greater Boston area, or the equivalent in summer social welfare in-service programs. Prepares for social work assistants, and for further graduate study.
Simmons College. School of Social Work 51 Commonwealth Ave., Boston, Mass. 02116	
M. S. Social Work.....	2 yrs. Field work in both first and second years in community social agencies and institutions.
Smith College. School of Social Work, Northampton, Mass. 01060	
M.S. Social Work.....	2 yrs. Choice of two field work plans: (a) One year winter field work plus three summers of class work, or (b) One year of classwork plus two summers of field work.
Third Year Diploma.....	One year course after the master's degree.
D. Social Work.....	Includes independent research and thesis.
Tufts University. College of Liberal Arts and Jackson College, Medford, Mass. 02155	
B. S. Sociology.....	4 yrs. Includes field work and prepares for social work assistant positions, and for further graduate study.

VETERINARIAN SPECIALIZATION

In the city we associate the role of the veterinarian with caring for household pets in his private office or animal hospital. In the country, he is the farmer's doctor, caring for his cows, horses, swine or poultry, traveling from place to place by automobile and plane and keeping in touch with his office by radio telephone. A few build clinics where animals can be taken, but in most cases, the veterinarian goes to the animals, vaccinating them for protection against disease, giving medical care, performing surgery when necessary, teaching owners proper methods of caring for and feeding the animals. By protecting and treating the animals, the veterinarian helps to stop animal diseases from spreading to man.

In the public health field, veterinarians develop programs for the control of animal diseases affecting man, help set up statewide veterinary public health programs, serve as consultants on committees, and participate in other public health projects.

Veterinarians in public health collect and evaluate statistical data on human illness caused by animals, study the effects of air pollution on animals, and conduct basic research on chronic and communicable disease to help reduce diseases which may spread from area to area.

Some veterinarians are meat and poultry inspectors, work for the U. S. Department of Agriculture, supervise stockyards and license firms manufacturing serums and vaccines for animals. They may be responsible for enforcing federal regulations on food safety, or may work with the import and export of animals and animal products.

There is no veterinary college in New England (a four year graduate program). A student interested in veterinary medicine should be enrolled in a pre-medical program leading to a baccalaureate degree, then transfer to one of the twenty veterinary colleges in the United States and Canada. In some instances certain of these colleges may accept for admission three years of undergraduate work, but the probability of acceptance from an out-of-state applicant is higher if he already has his B. S.

The license to practice veterinary medicine is based upon graduation from a veterinary college and the taking of a written and practical examination given by a registration board in each state.

To enter the public health field, the veterinarian must take work at an accredited school of public health which requires for admission one or two years of practical experience in his field.

Training Programs	
Massachusetts Institute of Technology, 211 Massachusetts Ave., Cambridge, Mass. 02139	
D. in Animal Pathology and Physiological Chemistry.....	For veterinary college graduates.

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Training Programs	
Massachusetts Institute of Technology (contd.)	
M. S. and Ph. D. in Food Sciences and Technology.....	For veterinary college graduates who will work in the armed forces or in civilian work throughout the world and will be concerned with the maintenance of food safety.
M. S. and Ph. D. in Nutritional Biochemistry and Metabolism.....	
University of Massachusetts. Graduate School, Dept. of Veterinary and Animal Sciences, Amherst, Mass. 01002	
M. S. in Veterinary Hygiene.....	For veterinarians and others with appropriate academic training. Emphasis is on infectious diseases of animals. A strong background in microbiology is preferred.
M. S. and Ph. D. in Animal Science.....	Includes studies in mammalian and avian biology with options in (a) genetics, (b) physiology, and (c) nutrition. Prerequisite: a strong background in biology, chemistry or mathematics.

(VETERINARIAN)

Colleges of Veterinary Medicine in Universities in the United States and Canada: 4 yr. graduate program.

Auburn University, Auburn, Alabama
University of California, Davis, California
Colorado State University, Fort Collins, Colorado
University of Georgia, Athens, Georgia
University of Illinois, Urbana, Illinois
Iowa State University, Ames, Iowa
Kansas State University, Manhattan, Kansas
Michigan State University, East Lansing, Michigan
University of Minnesota, St. Paul, Minnesota
University of Missouri, Columbia, Missouri
Cornell University, Ithaca, New York
Ohio State University, Columbus, Ohio
Oklahoma State University, Stillwater, Oklahoma
Ontario Veterinary College, Guelph, Ontario, Canada
University of Pennsylvania, Philadelphia, Pa.
Purdue University, Lafayette, Indiana
L'Ecole de Medecine de la Province de Quebec, St. Hyacinthe, Quebec, Canada
Texas A & M University, College Station, Texas
Tuskegee Institute, Tuskegee, Alabama
Washington State University, Pullman, Washington